COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA

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DEDICATED TO MY PARENTS
MR. SUKHWINDER SINGH & MRS.
KULDEEP KAUR
&
MY FIANCÉ
MR. SHARAV DHIMAN

In appreciation of their unconditional support and affection.

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"Instead of worrying about what you cannot control, shift your energy to what you can create."

— Roy T. Bennett

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ABBREVIATIONS

TDT	Transfusion-dependent Thalassemia
NTDT	Non-transfusion-dependent thalassemia
TM	Thalassemia Major
TI	Thalassemia Intermedia
BTT	BetaThalassemia Trait
TDTM	Transfusion-dependent Thalassemia Major
HbE	Haemoglobin E
HbS	Haemoglobin S
ß	Beta
ADHD	Attention Deficit Hyperactivity Disorder
CDI	Children's Depression Inventory
MDLE	Major Depression-Like Symptom
EXT	Externalising
INT	Internalising
IL-1β	Interleukin-1 beta
EAQ	Emotional Awareness Questionnaire
CBCL	Child Behavior Checklist
DSM III	Diagnostic and statistical manual of mental disorders 3
QOL	Quality of life
GHQ	General Health Questionnaire

BTM	(beta)Thalassemia Major
PedsQL	Pediatric Quality of Life
PSC	Pediatric Symptom Checklist
SES	Socio Economic Status
DFX	Deferasirox
DFP	Deferiprone
DFO	Deferoxamine
HRQL	Health Related Quality of Life
TM	Thalassemia Major
TI	Thalassemia Intermedia
BTT	(beta)Thalassemia Trait

ABSTRACT

Introduction: More than one typical globin chain does not synthesize properly or does not synthesize at all in a category of blood illnesses known as "thalassemia". Currently, based on their clinical severity and transfusion requirement, these can be classified phenotypically into Transfusion-Dependent (TDT) and Non-Transfusion-Dependent Thalassaemias (NTDTs). There are, however few psychological researches that examine the effects of the illness on the children with transfusion-dependent thalassemia among the researches that were conducted. A dearth of literature regarding variables used in the present research on the on the current population in the Indian subcontinent. To fulfill the research, gap the present study aims to investigate coping mechanisms, emotional awareness, behavioural issues, and the effect of disease on family dynamics and relationships.

Aim of Study: 1) To evaluate and compare coping strategies in children with transfusion-dependent thalassemia and healthy control. 2) To evaluate and compare emotional awareness in children with transfusion-dependent thalassemia and healthy control. 3) To evaluate and compare internalizing and externalizing behavior in children with transfusion-dependent thalassemia and healthy control. 4) To evaluate and compare the functioning of families across children with transfusion-dependent thalassemia and healthy control. 5) To investigate the correlation between coping mechanisms, emotional awareness, internalizing or externalizing behaviour, and the functioning of families in children with transfusion-dependent thalassemia.

Materials & methods: The research consist of conducted on 75 children with transfusion-dependent thalassemia attending the Thalassemia Daily Care Center at Dayanand Medical College and Hospital, Ludhiana, and 150 healthy control population taken from local schools, all aged between 8-16 years. Psychological evaluation was done using emotion awareness questionnaire (EAQ), general health questionnaire-12 (GHQ-12), pediatric symptom checklist (PSC-17), PEDSQL™ family impact module, KIDCOPE, and children's depression inventory (CDI).

Results: In the present study, both groups showed similar demographic distributions, with no significant variation in age, gender, education level, family structure, or socioeconomic status. TDTM children experienced higher rates of comorbidities, such as liver iron overload, Osteopenia, and delayed puberty. Treatment costs and hospital stays were considerable for TDTM children, impacting school attendance. TDTM children displayed lower emotional awareness, higher depressive symptoms, and internalizing behaviour compared to controls. Additionally, TDTM parents reported lower quality of life and family functioning. Coping strategy effectiveness varied between groups, with TDTM children exhibiting less effective coping mechanisms. Correlation analyses revealed associations between various factors, including parental functioning, treatment costs, coping strategies, and psychological outcomes.

Conclusions: Children with transfusion-dependent thalassemia face significant psychological challenges compared to healthy controls. Their lower emotional awareness, poorer family functioning, and higher depressive symptoms highlight the need for tailored interventions. Understanding the interplay between parental functioning, coping strategies, and psychological outcomes is crucial for developing effective support programs for TDTM children and their families. Further research should explore longitudinal effects and intervention efficacy to enhance holistic care approaches.

Keywords: children with thalassemia, behaviour problem, coping strategies, emotional awareness, impact on family functioning.

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INTRODUCTION

Hemoglobinopathies are the most prevalent genetic illnesses worldwide, including thalassemia and defective mutant haemoglobins including Haemoglobin S, D, and E. Approximately 7% of the world's population has a gene for defective haemoglobin, with an estimated 300,000 to 500,000 newborns born each year with serious haemoglobin abnormalities. These illnesses are classified into two types: thalassemia and sickle cell syndromes. Thalassemia accounts for around 30% of afflicted newborns globally.[1]

Thalassemia is clinically classified as Thalassemia Major (TM), Thalassemia intermediate (TI), and Thalassemia Minor or Trait based on severity. Thalassemia Major (TM) and the severe type of Thalassemia Intermedia (TI) account for the majority of the disease burden since both require lifelong blood transfusions and iron chelation. Thalassemia mild, also known as (beta)Thalassemia Trait (BTT), is a carrier status when individuals are clinically normal. The thalassemia syndromes (TM and TI) are produced by the inheritance of faulty thalassemia genes from both carrier parents. One parent carries the thalassemia gene, whereas the other carries a faulty mutant hemoglobin gene (HbE, HbS). [1]

Inherited disorders affecting red blood cells, known as hemoglobinopathies, pose significant challenges, leading to high rates of illness and death. This places a considerable strain on families and healthcare systems in our nation. India bears the greatest burden of children affected by Thalassemia-Major globally, with approximately 100,000 to 150,000 cases, and nearly 42 million individuals carrying the ß (beta) thalassemia trait. Each year, roughly 10,000 to 15,000 babies are born with Thalassemia major. Thalassemia is gradually becoming one of the real global health problems in the Mediterranean region, the Middle East, India, and the eleven Southeast Asian nations. The highest incidence of thalassemia cases is found in European

nations like Italy and Greece. [2] Between 1.4 and 3.4% of people in Central India had the thalassemia trait, while 0.94% of anemia patients had the condition. The incidence of thalassemia trait ranged from 8.50 to 37.90% and that of TM from 2.30 to 7.47% in South India. There was a greater burden of thalassemia in the northern and western Indian states. The prevalence of thalassemia trait (0.00-30.50%), TM (0.36-13.20%), and other hemoglobinopathies [Hb E (HBB: c.79G>A)/-thal] (0.04-15.45%) was greater in tribal communities in Eastern India than in non-tribal populations. [3]

Thalassemia is further distinguished between the following types: -

Alpha thalassemia is a type of anaemia, that commences before birth and arises due to the deletion of alpha-globin genes, leading to a decrease or absence of alpha-globin chain synthesis. The alpha globin gene comprises 4 alleles, and the severity of the condition varies based on the number of deleted alleles. The most severe form involves a deletion of all four alleles, resulting in the complete absence of alpha-globin. This condition is incompatible with life, leading to hydrops fetalis, as excess gamma chains, typical during fetal development, form tetramers. Conversely, the mildest form involves the deletion of just one allele, often manifesting with minimal clinical impact.
There are four types of alpha thalassemia:

1.1 Carrier: This occurs when an individual has one missing gene or gene change for alpha thalassemia. Carriers typically do not display symptoms but can pass the condition to their offspring.

1.2 Alpha thalassemia minor (alpha thalassemia trait): Caused by two missing genes or gene changes, this condition might not show signs or symptoms in the affected individual. However, mild anaemia may be present, leading to feelings of tiredness.

1.3 Hemoglobin H disease: Resulting from three missing genes or gene changes, this condition can cause anemia and more severe complications in the affected individual.

1.4 Alpha thalassemia major (hydrops fetalis): This is the most severe form, caused by four missing genes or gene changes. It can lead to stillbirth or the death of the baby shortly after birth. Stillbirth refers to the unfortunate event when a baby dies in the womb after 20 weeks of pregnancy. [4]

Beta thalassemia originates from mutations in the beta-globin gene and is categorized by the mutation's zygosity. A heterozygous mutation (beta-plus thalassemia) leads to beta-thalassemia minor, causing a reduction in beta chain production, typically resulting in mild or no symptoms. Conversely, beta thalassemia major stems from a homozygous mutation (beta-zero thalassemia) in the beta-globin gene, causing the complete absence of beta chains. This severe form presents with clinical manifestations like jaundice, stunted growth, enlarged liver and spleen, hormonal irregularities, and severe anemia necessitating lifelong blood transfusions. Beta-thalassemia intermedia, lying between these three types, exhibits moderate symptoms. [4]
There are three types of beta thalassemia:

2.1 Beta thalassemia minor (beta thalassemia trait)**:** One mutant gene causes only minor indications and symptoms or they may experience mild anemia. Thalassemia minor is the medical term for this ailment.

2.2 Beta thalassemia intermedia: A non-transfusion-dependent thalassemia resulting from two gene changes, this form typically leads to mild anemia.

2.3 Beta thalassemia major (Cooley's anemia)**:** A transfusion-dependent thalassemia, moderate to severe signs and symptoms. This

is known as thalassemia major, also known as Cooley anemia. Babies born with two mutated beta hamoglobin genes typically appear healthy initially, but the disease begins to show after about 6 months of life when fetal hemoglobin (Hb-gamma) diminishes and is substituted by adult Hb, marking the onset of symptoms. [5]

Thalassemia major typically manifests clinically between the ages of 6 and 24 months. Infants with the condition struggle to thrive and get progressively pale. Feeding problems, agitation, repeated fever episodes brought on by an overactive metabolism, or a concurrent infection. [6] Presently, these thalassemia syndromes can be divided phenotypically into two main groups based on their clinical severity and transfusion requirement: 1. Transfusion-Dependent Thalassaemias (TDTs) and 2. Non-Transfusion-Dependent Thalassaemias (NTDTs).

The degree of thalassemia determines the appropriate treatment. For mild forms or mild anemia, medical intervention might not be necessary. However, for more serious cases, treatment options may include:

1. **Blood transfusions**: Individuals with serious forms of thalassemia might require regular blood transfusions, sometimes as frequently as every 2 to 4 weeks. This process involves introducing proper amounts of red blood cells into the body to alleviate the condition's effects.

2. **Iron chelation therapy:** Thalassemia and frequent blood transfusions can lead to excessive iron accumulation in the blood. Iron chelation therapy helps in removing this excess iron. Medications such as Deferasirox (Exjade®), Deferiprone (Ferriprox®), or Desferoxamine (Desferal®) administered orally or via intravenous infusion can be used for this purpose.

3. **Folic acid supplements:** To aid in the treatment of anemia, individuals might need to take folic acid supplements. Folic acid, a vital B vitamin, is required for proper cell growth and development.

4. **Bone marrow transplant**: In severe cases, a bone marrow transplant, a type of stem cell transplant, might be considered. Stem cells obtained from bone marrow or umbilical cord blood can generate healthy cells in the body. This procedure is high-risk and typically reserved for the most severe cases. It's most effective when the bone marrow donor is an exact genetic match to the individual, such as an identical twin. [7]

The biopsychosocial model could be used to explain the impact of thalassemia. As thalassemia is a genetic mutation impacting the production of hemoglobin an important biological factor due to its chronic nature. Many children are anticipated to face an elevated risk of encountering anxiety, depression, feelings of isolation, and poor self-concept due to frequent hospital visits and medical procedures such as the insertion of intravenous lines and the use of subcutaneous infusion pumps could also lead to the development of fear associated with them. It also involves social factors such as family, friends, community, employment, and education. These challenges tend to impact their self-assurance, leading to emotional and cognitive abnormalities might have a negative impact on their overall quality of life and ability to stick to therapy. As with thalassemia a person's life must undergo significant changes as a result of several chronic conditions. The psychosocial response to chronic conditions is also influenced by routine changes, such as taking on a caregiving role, changes in one's sexual life, social relationships, and material well-being. Unsatisfactory adaptation can result in sadness, denial, lower self-esteem, addiction, social disintegration, job problems, discord and the desire to establish a family also cause an individual’s anxiety to increase. In thalassaemia major, psychological well-being affects survival via influencing adherence to chelation therapy.

Thalassaemic children feel different from their peers and elaborate negative thoughts about their lives, guilt senses, increased anxiety, and

low self-esteem. Concerns for the future of the thalassaemic child within the family may deteriorate inter-relationships and enhance marginalization and isolation.[8] Even though children with TM have longer life expectancies thanks to superior medical care, the psychosocial issues they experience must also be taken into consideration.

PSYCHOSOCIAL PROBLEMS

DEPRESSION

A depressed mood is referred as subjective sense of sadness, feeling “blue” or “down in the dumps” for a prolonged period. Symptoms may encompass feelings of depression, disinterest, or despair, accompanied by sensations of emptiness, hopelessness, or frequent crying episodes. Significant changes in weight without intentional dieting, fluctuations in appetite, persistent insomnia or excessive sleepiness, observable restlessness or slowed movements, chronic fatigue or diminished energy levels, and pervasive feelings of worthlessness or exaggerated guilt are also commonly experienced, Daily struggles with reduced cognitive abilities, difficulties in concentration, or frequent indecisiveness, along with recurring thoughts of death or suicidal ideation, are common. These symptoms lead to significant distress or hinderance in crucial aspects of social, work-related, or other essential functioning. [9]

Depression manifests differently across various age groups:

- **In children** signs of depression include anxiety, irritability, feigning illness, school refusal, clinging to parents, or expressing fear about losing a parent.
- **Older children and teens** with depression may display disruptive behavior at school, sulking, heightened frustration, restlessness, low self-esteem, and might also have concurrent disorders like anxiety, eating disorders, ADHD, or substance use disorders. They might experience excessive sleepiness (hypersomnia) and increased appetite (hyperphagia). In adolescence, females tend to

experience depression more frequently than males, possibly due to unique biological, hormonal, and life cycle factors.

- **Young adults with depression** may exhibit irritability, complain of weight gain and excessive sleepiness, and generally hold a negative view of life and the future. They commonly have coexisting conditions like generalized anxiety disorder, social phobia, panic disorder, or substance use disorders. [10]

In children between the ages of 6 and 12 with transfusion-dependent thalassemia (TDT), there is a correlation between recurrent blood transfusions, high iron levels, and immune-inflammatory responses with the occurrence of depression. A study using the Children's Depression Inventory (CDI) measured depression levels, alongside assessing iron status (serum iron, ferritin, transferrin, TS%), and serum levels of specific inflammatory markers (CCL11, IL-1β, IL-10, and TNF-α) in children with TDT, both with (54 participants) and without (57 participants) major depression-like episodes (MDLE), compared to healthy children (55 participants). The data reveal that MDLE in children with TDT is associated with a higher number of blood transfusions, raised levels of iron overload, and increased IL-1β (interleukin-1 beta) levels in the bloodstream. Through partial least squares path analysis, it was revealed that around 68.8% of the variation in the CDI score (measure of depression) can be accounted for by these factors. [11]

The prevalence of depression among children with thalassemia major is 34.4%. Factors such as mothers' lower levels of education and the usage of deferasirox, an iron-chelating drug, have been associated to depression in these children.

BEHAVIOURAL PROBLEMS

Internalizing and Externalizing are two broad categories of behavioural problems: externalizing problem behaviour (EXT) particularly occurs in interaction with the social environment (e.g., aggression, impulsivity, deviance, hyperactivity). Whereas internalizing problem behaviour

(INT) is focused on the own self (e.g., withdrawal, anxiety, depression, emotional problems). The terms were introduced in 1966 and derived by factor analysis of children's psychiatric symptoms.

In the first group, the results of low control, presented as aggressive, impulsive, antisocial, and confrontational conduct, have an immediate influence on others. In the second category, excessive control, which is manifested as social withdrawal, inhibition, depression, or various kinds of anxiety, has immediate consequences for the child, reducing social experiences and creating barriers to social and psychological adjustment during childhood (Aunola & Nurmi, 2005). [13]

Children with internalizing disorders can also negatively affect their peers, siblings and parents. Children displaying externalizing behaviour may also have some internal issues as well. However, despite this overlap, it is useful to examine internalizing disorders independently from their externalizing counterparts to better understand their unique contributors, courses and consequences. Externalizing disorders such as conduct disorder, aggression and violence have a negative impact on the environment and on others.

INTERNALIZING DISORDERS

The primary internalizing conditions in paediatric mental health encompass depressive disorders, anxiety disorders, somatic complaints, and teenage suicide. These conditions were selected due to their prevalence and their link to the emergence of substantial adverse outcomes in later stages of life. For instance, childhood anxiety disorders are frequently connected to the onset of adult anxiety disorders, major depressive disorder, suicidal tendencies, and psychiatric hospitalization, as highlighted by research such as that conducted by Pine et al. in 1998. [14] It involves following:

1. Depression

Depression is a mental health condition characterized by an overwhelming sense of sadness and a diminished interest in activities that are typically enjoyable. While the average onset age for adolescents is around 14.9 years, some children can experience depression as early as age 3, as documented by studies like those by Lewinsohn et al. in 1994 and Copeland et al. in 2009. Statistics reveal that depression affects approximately 1% of preschoolers, 2% of school-aged children, and around 5–8% of adolescents, based on research by Birmaher et al. in 1998 and Jellinek & Snyder in 1998. There's an observed trend of increasing prevalence rates across generations, with earlier onset ages, as noted in studies by Gershon et al. in 1987 and Gotlib & Hammen in 2008.

2. Anxiety

Anxiety can be described as a ‘state of apprehension without cause’ (Johnson & Melamed 1979). Anxiety disorders emerge when this feeling of anxiety persists and significantly disrupts a child's school life, social interactions, daily activities, or family dynamics. According to research by Costello & Angold in 1995, anxiety disorders represent the most prevalent psychiatric conditions among children. Disorders such as separation anxiety disorder and selective mutism are exclusively observed in children, as outlined by the American Psychiatric Association in 1994. The onset age for certain anxiety disorders, such as separation anxiety disorder, can be as early as 7.5 years, based on studies like that conducted by Last et al. in 1992.

The literature describes five basic anxiety disorders: separation anxiety disorder, social anxiety disorder, generalised anxiety disorder, post-traumatic stress disorder and obsessive-compulsive disorder, as outlined by Tandon et al. in 2009.

3. Somatic complaints

Somatic complaints refer to physical symptoms that lack a specific, identifiable physiological cause, as defined by Brown in 2007. These

complaints commonly observed in pediatric cases encompass issues like headaches, nausea, or abdominal pain. Such symptoms typically arise without a clear physiological basis and are often linked to psychological distress, anxiety, family dynamics, or life events, as mentioned by Chapman in 2005. There's a cyclic relationship associated with somatic complaints where physical symptoms lead to emotional stress, which, in turn, exacerbates the somatic symptoms, as indicated in research by Vaalamo et al. in 2002.

Studies on somatic complaints have primarily focused on children aged 3 or 4 and above, making it challenging to pinpoint a precise onset age. However, prevalence rates have been estimated, suggesting that around 20% of children experience somatic complaints, with the prevalence increasing to 40% for those aged 10 years or younger and up to 55% for children aged 15 years or younger, based on research by Bass & Murphy in 1995 and Domenech et al. in 2004.

4. Teenage suicide

Teenage suicide represents a significant and concerning public health issue. In the United States, suicide is the third greatest cause of mortality among those aged 10 to 24 years, as reported by the National Center for Health Statistics in 2007. While suicide incidents can occur during childhood, the incidence rates tend to rise as individuals grow older, according to research by Pelkonen & Marttunen in 2003. The gravity of this issue is shown by statistics from the 2007 Youth Risk Behaviour Surveillance, which found that around 14.5% of high school students seriously considered attempting suicide within the year preceding the survey. Furthermore, 11.3% of these students had devised a strategy for attempting suicide, according to a 2009 research by Langhinrichsen-Rohling et al.

EXTERNALIZING BEHAVIOUR

1. Aggression

Aggression serves as a key component within conduct disorder, characterized by behaviors—whether physical or verbal—that cause

harm or pose threats to others, spanning children, adults, and animals (APA, 1994). This aggression might manifest as either appropriate and self-protective or destructive to both oneself and others (Ferris & Grisso, 1996). It holds significant importance in childhood development as studies indicate a strong link between childhood aggression and future criminal or violent behavior in adulthood (Farrington, 2001; Moffitt, 1993). Farrington's research highlighted that early-onset aggressive and antisocial behavior strongly predicted subsequent criminal convictions. Typically, aggression is more prevalent in boys than in girls, with boys often engaging in physical aggression and girls showing relational aggression, such as social exclusion and verbal slander (Hadley, 2003). Hostile aggression is seen as a response to initiated physical or verbal aggression by others, marked by uncontrolled, emotionally charged violence resulting in injury or pain to the victim, without advantage to the aggressor. This type is referred to as "affective," "reactive," "defensive," "impulsive," or "hot-blooded" aggression (Atkins & Stoff, 1993). In contrast, instrumental aggression is calculated and purposeful, lacking emotion, and aimed at achieving specific goals, such as dominating or controlling others (Atkins & Stoff; Dodge, 1991; Feshbach, 1970; Meloy, 1988).

2. Delinquency

Delinquency encompasses a wide range of antisocial behaviors, as outlined by Farrington (1987), including acts like theft, burglary, robbery, vandalism, drug use, and violence. The term "juvenile delinquency" pertains specifically to minors breaking the law, but since many delinquent behaviors go undetected, "delinquency" is often used more broadly to denote antisocial behaviors that might not necessarily involve legal repercussions.

Abuse, both physical and sexual, has been found to have a major impact on both delinquency and aggressiveness. (Fogel & Belyea, 2001; Widom, 1997). Additionally, transactional influences, such as the intricate interplay among parental stress, parental responsiveness,

disciplinary approaches, and infant temperament, have been highlighted as crucial elements shaping antisocial behavior (Shaw & Winslow, 1997).

Genetic variables have also been linked to nonviolent kinds of deviant and criminal behaviour. Studies on twins (Rowe, 1983) and adoption/cross-fostering (Hutchings & Mednick, 1975) have suggested a partial genetic influence on antisocial and criminal behavior. Mednick, Gabrielli, and Hutchings (1984) conducted an adoptee study involving 14,427 individuals, examining the criminal histories of both their biological and adoptive parents. The results indicated a significant correlation between biological parents' criminal convictions and the likelihood of their adopted-away children having criminal convictions, suggesting a higher propensity for criminal behavior in individuals with criminal biological parents.

3. Hyperactivity

The term "hyperactivity" has been regarded by Hinshaw (1987) as one of the most perplexing terms in psychopathology due to its reference to two distinct issues. Firstly, it denotes an excess of motor activity or restlessness, and secondly, it involves attention deficits, particularly in sustaining and regulating attention in settings like the classroom. Although, it represents a single disorder, children may meet the diagnostic criteria by displaying symptoms related to inattention (e.g., difficulty sustaining attention, being easily distracted) or symptoms associated with hyperactivity-impulsivity (e.g., frequent interruptions, impulsiveness).

It's noted that hyperactivity, encompassing both attention and hyperactive forms of this disorder, is observed more frequently in boys than girls, affecting approximately 3% to 5% of school-age children (APA, 1994; Hinshaw, 1987).

Children exhibiting both hyperactivity and conduct issues tend to be the most significantly impaired. Among those with hyperactivity, the subset also presenting conduct disorder tends to have the poorest social adjustment in later life (Barkley, Fischer, Edelbrock, & Smallish, 1990). The discussion also extends to identifying children who might grow up to exhibit psychopathic behaviors, characterized by a lack of guilt, blunted affect, impulsivity, and irresponsible conduct. Lynam (1998) argues that children displaying both conduct problems and difficulties with hyperactivity, impulsivity, and attention are more likely to develop into what he terms "fledgling psychopaths."

Over the last 25 years, studies have indicated that the prevalence of behavioural abnormalities among thalassemic children ranged from 23 to 80%, and that these psychological disturbances negatively impair thalassemia treatment compliance. Anxiety, hopelessness, and depression can also be brought on by frequent hospitalisation due to transfusions, being away from the family, activity restrictions and pain, iron chelation therapy side effects, and fear of death. Patients may go through many stages of their lives with a variety of mental issues include anger, bitterness, hostility, hopelessness, inability to cope with worry, dread of death, loss of confidence, somatization, decreased self-esteem, loneliness, irritability, helplessness, and a lack of respect for oneself.[15-16] The risk of behavioural and developmental issues is higher in thalassemia children, according to a small number of studies. The findings, however, were mixed, ranging from minor behavioural issues to overt psychiatric diseases. [17] As a result of their inability to focus and concentrate, poor memory, inappropriate behaviour in the classroom, and increased delinquency and crime in adulthood, emotional and behavioural issues in children make it difficult for them to learn. [18]

Emotional and behavioural issues in children are frequently correlated with a variety of biopsychosocial stressors, such as physical sickness, domestic abuse, insufficient peer interactions, and parenting (Wiguna

et al., 2010). [19] The behavioural profile of thalassemic children is similar to that of normal subjects, but many of them can exhibit severe psychosocial problems due to difficulties in complying with the painful chelation; male patients, in particular, show oppositional defiant disorder.

COPING STRATEGIES

Stress is a negative experience, accompanied by predictable emotional, biochemical, physiological, cognitive, and behavioural accommodations (Baum1999). The word "cope" is derived from the Latin word "colpus" meaning to alter. as defined in the Webster's Dictionary, is usually used in the psychological paradigm to denote "dealing with and attempting to overcome problems and difficulties."

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Coping is the process of attempting to manage the demands created by stressful events that are appraised as taxing or exceeding a person's resources (Lazarus & Folkman 1984). Coping requires three basic elements: a) the primary cause of the stress (the event or stressor); b) cognitive assessment b) cognitive appraisal (which includes evaluation of the event as being irrelevant, threatening or positive, and simultaneous assessment of available coping resources within the individuals and their environment); and c) coping mechanisms. Folkman and Lazarus split the coping styles into four groups:

1.1 Problem-focused coping: It encompasses approaches that directly address the underlying source of distress, including proactive coping, strategizing, exercising restraint, and prioritizing over other activities.

1.2 Emotion-focused coping: The goal is to ease adverse emotions associated with the issue by employing strategies such as positive reinterpretation, acceptance, seeking solace in religion, and finding humor in the situation.

1.3 Meaning-focused coping: involves cognitive strategies used by individuals to understand and manage the significance of a situation.

1.4 Social coping or support-seeking: involves reducing stress by seeking emotional or instrumental support from one's community or social circle. [20]

Weiten also described types of coping strategies: appraisal-focused (adaptive cognitive), problem-focused (adaptive behavioural), emotion-focused:

1.1 Appraisal-focused or adaptive cognitive strategies: Involves individuals intentionally modifying their thought patterns to adopt a more optimistic outlook on their circumstances. This might include adjusting goals or values and finding humour in challenging circumstances.

1.2 Problem-focused or adaptive behavioural coping strategies: Entail actively addressing the root cause of a problem by seeking information, acquiring new skills, or taking actions aimed at changing or eliminating the stressor.

1.3 Emotion-focused coping strategies: It revolve around managing the emotions linked to perceived stress. This approach involves techniques such as releasing built-up emotions, distracting oneself, handling hostile feelings, practicing meditation and mindfulness, and employing relaxation methods systematically. Emotion-focused coping aims to alleviate distress by minimizing, reducing, or preventing the emotional aspects of a stressor.

Coping entails taking action in response to a stressor, which is perceived as encountering challenges in achieving one's goals, [21] and exists when an individual perceives the achievement of a desired goal as impossible or detects possible future punishments. [22] Therefore, coping refers to an individual's effort to employ cognitive and behavioral tactics aimed at handling and controlling pressures, demands, and emotions in reaction to stress. [23]

Anthony Spirito et al. (1988) developed the KIDCOPE scale to assess coping strategies, offering two versions: one for children aged 7 to 12 and another for those aged 13 to 18. The scale consists of 15 items for younger children and 10 items for older adolescents. Each version comprises 10 main coping strategies, including Distraction, social withdrawal, wishful thinking, self-criticism, blaming others, problem solving, emotional regulation, cognitive restructuring, social support, and resignation. Notably, the younger version includes two items for several strategies instead of just one. [24] Among thalassemic children aged 12 to 18 years in a studied sample, the predominant coping strategies employed by females were avoidance and distraction techniques, categorized under emotion-focused coping methods. [25] A meta-analysis involving 311 papers was conducted to select candidates for a systematic review. Among patients diagnosed with beta-thalassemia, They were seen to adopt emotion-focused coping methods, notably distraction and avoidance tactics, to manage their issues. Additionally, parents of these patients predominantly utilize religious coping methods as their primary strategy. Furthermore, a significant link was found, demonstrating a favourable relationship between effective coping techniques and both quality of life and resilience in those living with beta-thalassemia. [26]

EMOTIONAL AWARENESS

From an early age, humans learn to manage their basic emotions to effectively adapt to environmental changes that impact their well-being. Children are taught to regulate these instinctive reactions and learn

alternative ways to respond, aiming for a balance between personal needs and societal expectations. As individuals grow older, cognitive control mechanisms become more crucial in this process. This involves understanding one's own emotional responses, known as emotional awareness, which is widely acknowledged as essential for effective emotion regulation (Lambie & Marcel, 2002). [27]

Emotional awareness is the ability to conceptualize and describe one's own emotions and those of others. [28] Emotional awareness, in its more specific definition, pertains to an attentional process intertwined with interpretative and evaluative functions. This process allows us not only to observe our emotions but also to differentiate between various emotions qualitatively, identify their triggers, and recognize the physiological aspects associated with the emotional experience. However, emotional awareness extends beyond mere attentional processes and encompasses attitudinal aspects. It involves assessing how individuals perceive emotions: whether they consider emotions positively or negatively as a part of themselves, and whether they view emotional experiences as private occurrences to be kept to oneself or as interpersonal processes to be shared and communicated with others. [27]

A Cognitive-Developmental Theory Of Emotional Awareness

1. The Relation between Emotion and Emotional Awareness

To grasp emotional awareness, it's important to initially explore the concept of emotion itself. One prevalent perspective suggests that fluctuations in emotional experiences from one moment to another align with ongoing and involuntary adjustments in physiological, cognitive, and motivational conditions. These adjustments occur as a result of continuous evaluations, whether implicit or explicit, regarding the fulfilment or lack thereof of needs, goals, and values in response to interactions with the environment. [28]

In certain situations, non-verbal cues such as gestures and facial expressions can communicate information to others, playing a role in regulating relationships. When these facets of emotional experience align appropriately with the context, they can help address the environmental events that triggered them. [29] Pleasant experiences tend to evoke approach motivations, while distressing or painful events typically prompt avoidance motivations (in line with Thorndike's Law of Effect). [30] Unlike the automatic physiological and motivational processes mentioned earlier, conscious awareness of emotions can offer an added layer of adaptive control. Being conscious of one's emotions involves paying attention to and contemplating the bodily experiences generated automatically. This awareness also enables individuals to utilize the information consciously, incorporating it into decision-making processes or adjusting their behaviour based on a newfound understanding of their needs in a given situation. [28]

Succeeding in various social situations often relies on, or is significantly enhanced by, the ability to perceive and understand the emotions of others. When there is low awareness of others' emotions, internal simulation and prediction regarding how others might feel in response to different actions tend to be less accurate. This ability hinges not only on related skills like emotion recognition but extends beyond them. While studies have consistently shown a positive correlation between emotion recognition and emotional awareness, [31,32] it's important to note that these correlations are of minor effect size. This indicates that comprehending others' emotions entails more than mere recognition ability. It involves the capacity to internally represent, maintain, and manipulate information about others' emotions, predict emotional responses to specific events, differentiate others' emotions from one's own, and conceptualize others' emotions in a nuanced, context-sensitive manner. For instance, a similar facial expression might convey different internal states in varied contexts. [33,34]

Understanding emotional awareness in relation to others involves the capacity to simulate and comprehend the nuanced and diverse emotions that individuals might experience in particular situations. This ability enables individuals to utilize that information in a purposeful way, facilitating the effective regulation or management of others' emotions. This aspect was also highlighted in a recent study conducted by Smith et al. in 2021. [28]

2. A Theory of Emotional Awareness as a Cognitive Skill

In 1987, Lane and Schwartz proposed that an individual's capacity to recognize and articulate emotions, known as emotional awareness, is a cognitive skill that undergoes a developmental process akin to Piaget's description of the development of various cognitive abilities. [35,36] Similar to Piaget's framework illustrating the transition from sensory-based, action-oriented representations to abstract, conceptual representations in cognitive development, Lane and Schwartz were the pioneers in applying this framework to the realm of emotions. A core aspect of this model suggests that differences in emotional awareness reflect variations in how distinct and integrated the mental frameworks (implicit programs or sets of rules) used to process emotional information are, whether obtained from external stimuli or through introspection of internal experiences. Emotional awareness is regarded as a separate path in cognitive development that might progress somewhat autonomously from other psychological domains. [37]

This theoretical viewpoint aligns with contemporary understandings of both cognitive development and emotions. Karmiloff-Smith (1992) asserted that cognitive development involves "representational redescription," a process where procedural representations are converted into abstract conceptual representations. This process offers two distinct methods of understanding—with the latter being more intricate, versatile, and adaptable. [38] This concept parallels Barrett's constructivist theory of emotion, which suggests that individual

emotions arise from the conceptualization of "basic affect." This basic affect comprises relatively undifferentiated valenced bodily states (Barrett 2017). [39]

The model posits five “levels of emotional awareness” that share the structural characteristics of Piaget’s stages of cognitive development and constitute a continuum ranging from global, undifferentiated states to more differentiated and integrated states. [36] The levels of emotional awareness in ascending order are (1) awareness of physical sensations, (2) action tendencies, (3) single emotions, (4) blends of emotions (i.e., feeling multiple emotions at once), and (5) blends of blends of emotional experience. The highest level involves the ability to discern blends of emotions in oneself versus others (for example, feeling sad and ashamed personally, while the other individual feels happy and excited), which forms the basis for scoring in the Levels of Emotional Awareness Scale (details below). However, within Emotional Awareness theory, this level can also imply the capacity to envision diverse emotional blends that an individual (either oneself or others) might undergo in various hypothetical scenarios (such as contemplating potential outcomes of different actions).

Level 1—Somatic sensations/visceromotor activity: Emotional experience at this level consists of bodily sensations. Individuals describe somatic sensations or are unable to provide a description of their experience.
Level 2—Action tendencies/somatmmotor activity: Emotional experience at this level consists of actions or action tendencies (approach or avoidance, self-injurious behavior, etc.) and is described similarly. These action tendencies have an associated valence (feeling globally good or bad) that is undifferentiated.
Level 3—Individual feelings: At this level individuals experience emotion as a discrete and specific emotional feeling state. The description of emotion is one-dimensional and often stereotyped (“I feel angry”).
Level 4—Blends of feeling: This level is characterized by the capacity to have feelings that are opposed to or clearly different from each other, e.g., feeling sad yet hopeful.
Level 5—Blends of blends of feeling: At this level the individual has the capacity to appreciate complexity in the experiences of self and other simultaneously. The individual at this level is also able to appreciate the multi-dimensionality and nuance of the other’s feelings by imagining oneself in the other’s situation, unbiased by one’s own emotional state. Comparing the combination of feelings a given person might feel in one situation versus another is another example of level 5 functioning.

The hierarchical structure of the levels is depicted as a nested hierarchy in Figure 1, where functioning at each level builds upon and adjusts the functioning of previous levels without eliminating them. For

instance, experiences involving blends of emotions (Level 4) are linked to more detailed representations of bodily sensations (Level 1) when compared to action tendencies (Level 2) (Lane et al., 2011). Similarly, higher levels of emotional awareness correlate with increased heart rate variability at rest, which measures physiological differentiation over time in cardiac vagal control—a visceromotor function at Level 1 (Verkuil et al., 2016). This influence of higher levels on lower levels signifies a progressive integration. Hence, the five levels describe the cognitive arrangement or complexity of emotional experience as demonstrated in how individuals describe their experiences, rather than solely reflecting their thoughts about or evaluations of their emotions. The ability to generate such detailed descriptions likely relies on attending to one's emotions, contemplating their significance, and possessing the range of emotional concepts necessary for a nuanced understanding. [28]

At the core of comprehending these learning processes is the understanding that childhood emotions are regulated interpersonally (Fonagy et al., 2018). [40] During childhood, a child typically learns about their emotional responses primarily through the attunement, empathy, mirroring, and responsiveness of their caregiver, often the mother (Beebe and Lachmann, 2013). [41] From birth, infants exhibit a limited range of emotional expressions. For instance, crying, which seems identical, may stem from various reasons like hunger, thirst, fatigue, cold, discomfort from a soiled diaper, pain, or surprise. It falls upon the caregiver to discern the cause and provide the necessary remedy. Through the caregiver understanding the child's bodily state and emotional expressions and by alleviating distress through targeted actions and responsive behavior, among other forms of contingent responsiveness, the child gradually starts to comprehend that their bodily states carry meaning (Fotopoulou and Tsakiris, 2017; Gergely and Watson, 1996; Lane et al., 2018). In the absence of such responsiveness, young children might exhibit automatic emotional responses but have limited means to understand their emotions or their

significance. Studies in environments like orphanages (Colvert et al., 2008) or foster care (Pears and Fisher, 2005) have indicated that neglecting emotional needs while fulfilling physical needs can lead to impairments in self-regulation, socio-emotional cognition, and, if prolonged, even result in fatality (Croughs, 1971). [28]

As the child matures and acquires a wider range of emotions (as observed in Widen and Russell, 2008), cues indicating the child's feelings might include a diverse array of facial expressions, gestures, and other actions, forming observable nonverbal expressions of emotions. These, combined with the social or environmental context in which these responses occur, enable an observer to infer the child's emotional state. The caregiver's mirroring of the child's emotions provides visual and verbal cues consistent with internal bodily sensations, allowing the initiation of conceptualization of internal experiences (Beebe and Lachmann, 2013).[41] Once language skills develop, words become a crucial tool in enhancing one's conceptual understanding of their emotional experiences while interacting with an attuned individual. A prominent theory of emotions (mentioned earlier) suggests that nuanced emotional experiences result from connecting bodily sensations with concepts, a process significantly facilitated by language (Barrett, 2017).

To assess emotional awareness in children, the Emotion Awareness Questionnaire (EAQ) was created (Rieffe, Meerum Terwogt, Petrides, et al., 2007). [42] This questionnaire was designed to capture crucial concepts related to emotional awareness, resulting in six scales. These scales measure various aspects such as the ability to differentiate between emotions and locate their antecedents (Differentiating Emotions); attention to the physiological aspects of the emotion experience (Bodily Awareness, i.e. awareness that emotions are accompanied by bodily symptoms); the communication of emotions (Verbal Sharing); the blunt expression (Acting Out Emotions); and the willingness to face one’s own and others emotions (Attending to Others

Emotions and Analyses of (Own) Emotions, respectively). The study by Rieffe and colleagues (2007) confirmed that various facets of emotion awareness, as measured by the six scales of the EAQ, independently predicted internalizing symptoms in children. These symptoms included somatic complaints, depression, worry, and rumination. While a reduced ability to understand emotional triggers and differentiate between emotions was linked to all these symptoms, other scales showed distinctions in their association with specific internalizing symptoms. For instance, Verbal Sharing was linked to symptoms of depression and worry but not somatic complaints. Interestingly, the scale Acting Out didn't show a significant association with any of the dependent variables. It was discovered that the initial elements on the Acting Out scale indicated two components: the inclination to express emotions and the inclination to conceal them, viewed as opposite ends of a single dimension.

FAMILY FUNCTIONING

Families are two or more individuals who live in one household because of blood, marriage, or adoption relationships. They relate to one other, have their roles, and create and maintain a culture (Bailon and Maglaya, 1978). At an early age a child is like a blank slate and the first interaction that a child has is with parents and other family members. Through observation, learning child learns a lot of things from how to walk to how to react to situations.

Different aspects define the structure of a family, including systems, subsystems, supra-systems, boundaries, support networks, communication patterns, leadership dynamics, and cohesiveness. Mental illness is believed to result from a complex interplay between environmental factors and surroundings. Simultaneously, the family is recognized as the primary agent of socialization, serving as a nurturing and supportive environment in which a child is nurtured, valued, and provided for (Syamsu Yusuf and Nani M. Sugandhi, 2011). [43] The family plays a crucial role in an individual's development, as parents

and other family members serve as significant influencers. As an institution, the family caters to fundamental human needs encompassing both physical-biological and socio-psychological aspects. It serves as the primary environment where an individual learns basic societal rules, norms, and cultural practices through socialization. Additionally, the family unit functions as a center for emotional support and economic cooperation, contributing to an individual's sense of identity.

Family function is constrained by the features of the family and is dependent on social demand. Scholars have advocated the notion of family functioning, which embodies the qualities of the family as a system, since the 1970s. Two major theories of family functioning exist: The first is result-oriented, defining family functioning based on specific family characteristics. The second approach is process-oriented, characterising family function based on the tasks that families must fulfil. [44]

Parents express significant concern about their children's future, particularly regarding their health and employment prospects. There's a notable emphasis on their desire for their children to be strong and capable, even in physically demanding Uncertainty looms over various aspects of their future, such as education, marriage, and starting a family jobs. [45-47]

Mothers, in particular, experience both physical and psychological stress, often neglecting their own health concerns due to time constraints. [48] Studies focusing on mothers of children with conditions like thalassemia highlight the multiple stressors they face, including emotional, social, and financial burdens. [49] These challenges lead to a diminished quality of life, impacting both their physical and mental well-being. In Iraq, studies illustrate how predominantly maternal caregivers experience fear, guilt, and frustration due to concerns about the

complications of their children's diseases.[11] This emotional toll results in a loss of joy in life and a sense of inadequacy.

Over the past few years, research on psychosocial issues in children with thalassemia has grown. There are however, few psychological researches that examine the effects of the illness on the children with transfusion-dependent thalassemia among the researches that were conducted. Moreover, most of the researches in this area were done in western country. There is a dearth of literature regarding these variables on present population in the Indian subcontinent. In order to fulfil the research, gap the present study aims to investigate coping mechanisms, emotional awareness, behavioural issues, and the effects of disease on family dynamics and relationships.

AIMS AND OBJECTIVES

1. To evaluate and compare coping strategies in children with transfusion dependent thalassemia and healthy control.
2. To evaluate and compare emotional awareness in children with transfusion dependent thalassemia and healthy control.
3. To evaluate and compare internalizing and externalizing behaviour in children with transfusion dependent thalassemia and healthy control.
4. To evaluate and compare family functioning between children with transfusion dependent thalassemia and healthy control.
5. To study the relationship between internalizing or externalizing behaviour, coping strategies, emotional awareness and family functioning in children with transfusion dependent thalassemia.

REVIEW OF LITERATURE

Thalassemia is a heterogeneous group of blood disorders characterized by an imbalance of alpha and beta globin chains thus, resulting in ineffective erythropoiesis. The decreased production of hemoglobin results in anemia an early age and the need for frequent blood transfusions to maintain appropriate hemoglobin levels. symptoms of the illness emerge after a few months and worsen gradually over time. Adolescents, in particular, commonly experience lower-than-average growth rates for height, weight, and skeletal development, reflecting the impact of the disease on their physical maturation if not managed appropriately.

In a study conducted by Cadman et al. (1987) on “Chronic illness, disability, and mental and social well-being” a total of 1,869 Ontario families including 3,294 children aged between 4 to 16 years were included. Child Behaviour Checklist scale (CBCL) was used. Findings indicated that 20% of kids with long-term physical issues also have some type of psychological disorder. The incidence rate was 2–3 times the rate in the general population. According to the Diagnostic and Statistical Manual of Mental Disorders III, around 33% of these kids had at least one psychological disorder. [50]

Beratis, S. (1993) did a study on the "Psychosocial status in pre-adolescent children with β-thalassemia." Participants in the study included 57 children with beta-thalassemia and 57 control children of age 5–12 years old. Information was gathered from the patients, the control subjects, and their parents via a semi-structured interview. It examined the patient's personal history, academic performance, and psychopathology by the Diagnostic and Statistical Manual III-R (DSM-III-R) diagnostic criteria. The results show that there were significantly more psychiatric diseases in the sick group than in the control group. In comparison to the control group, thalassaemics had a higher rate of oppositional defiant disorder diagnoses.[51]

In a study conducted by Gharaibeh H, et. al., (2009) on “The psychological burden of patients with beta thalassemia major in Syria”, a total of 150 thalassaemic children aged 6–18 years participated. The structured questionnaire (developed by Ratip & Modell) that parents answered on behalf of their children was used. The outcome shows a significant relationship between socio-demographic factors like age, gender, school grade, current education, employment, and family income and the occurrence of complications with the psychosocial burden variables like education, time away from school, athletic ability, difference from friends, social interactions, and stigmatization. [52]

M Jain, et. al., (2013) conducted a study on “Psychosocial problems in thalassemic adolescents and young adults”, There were 54 children of both genders above the age of nine. Three groups of patients, Group A (10–15 years, 30 patients), Group B (15–20 years, 18 patients), and Group C (20–25 years, 6 patients), were formed. ICMR Symptom checklist was employed. The outcome suggests Behaviour issues, mood disorders, and psychotic symptoms were all prevalent in groups A, B, and C, respectively. Thus, it demonstrates that thalassemic adolescents and young people are more likely to experience psychosocial problems.[53]

Rizqallah A, et. al., (2017) conducted a study on “Quality of life in transfusion-dependent thalassemia patients”**,** It comprised 90 cases and 98 controls. The average age of patients was 8.3 ± 4.4 years, whereas the control group was 12.2 ± 4.7 years. The researchers used the World Health Organization's (WHO) Quality of Life Assessment Tool. The study found that there was no significant difference in quality-of-life scores among children with thalassemia. However, there was a more evident difference between male and female patients, with men having a greater fluctuation in their quality of life.[54]

GENERAL PSYCHOLOGICAL HEALTH PROBLEMS

Children with thalassemia suffer from wide range of psychological issues. Typically, during the first year, indicators such as pallor, irritability, diminished appetite, and failure to thrive are frequently observed.

Sherman, M., et. al (1985) conducted a study on “Thalassemic Children’s Understanding of Illness: A Study of Cognitive and Emotional Factors”, The study involved 23 male and female outpatients diagnosed with thalassemia, alongside 27 healthy individuals serving as controls. Participants ranged in age from six to sixteen years. The assessment included Form C of the Goldschmid-Bentler Concept Assessment Kit, a formal evaluation of combinatorial thinking, the vocabulary subtest from the Wechsler Intelligence Scale for Children Revised, and two figure drawings representing the same sex and the opposite sex. The thalassemic group was only assessed using the Rorschach Technique, thematic cards, the Rutter Behaviour Inventory, and the Children's Depression Rating Scale. A worldwide mental health ranking based on the Srole system as described by Michael and Kirkpatrick was implemented. Clinical data collected during parent-child interviews, including the Inside-of-the-Body Test, were used to determine adjustment ratings for each participant. While none of the respondents matched the DSM-III diagnosis for depressive illness, several had depressed moods along with poor self-esteem. Furthermore, guys tended to have poorer levels of adjustment than girls.[55]

Tsiantis J., et. al., (1996) conducted a study on “Psychosocial problems and adjustment of children with β-thalassemia and their families”, a total number of 188 families with children aged 6 to 14 years participated. Rutter Parental Questionnaire and the Goldberg General Health Questionnaire scales were used. Results of the study indicate that poor family adjustment was correlated with the father's low level of education and the prevalence of serious medical issues.[56]

In the study conducted by Shaligram D, et. al., (2007) on “Quality of life issues in caregivers of youngsters with thalassemia”, a total of 44 caregivers were examined for psychological problems using the 12-item version of the General Health Questionnaire (GHQ-12). Additionally, their concerns and QOL were evaluated using the Concerns Checklist and the EQ5D, respectively. The study's findings revealed that 57% of the caregivers were dealing with psychiatric issues, primarily marked by depressive disorders affecting 45% of them. The QOL was significantly impacted in 50% of the caregivers, particularly in dimensions related to pain/discomfort, mobility (17%), depression, and usual activities (14% each).[57]

Ali S, et. al., (2012) conducted a study on “Psychological distress and coping strategies among parents of beta-thalassemia major patients”, a total of 40 parents of thalassaemic children participated. The psychological distress was assessed using the Parental Stress Scale (PSS) and General Health Questionnaire (GHQ) and coping strategies were assessed using COPE Inventory. The result indicates that all the parents of the thalassaemic patients suffered extreme parental stress and psychological distress, specifically among parents of β-thalassaemic patients. The ongoing nature of beta thalassemia can place a heavy psychological load on both patients and their families.[58]

M Naderi, et. al., (2012) study was conducted on “Evaluation of Mental Health and Related Factors among Patients with Beta-thalassemia Major in South East of Iran”, a total of 164 patients suffering from Beta-thalassemia major with age range of 15-24 years participated in the study. General health questionnaire (GHQ-28) was used. The result of the study indicates there were high prevalence of psychological disorders in young patients with Beta-thalassemia major, especially in girls.[59]

Raman V. et. Al., (2019) conducted a study on “Psychosocial Issues in Children with Thalassemia: From Identification to a Model

for Management in a Developing Country", a total of 30 children participated. A semi structured demographic questionnaire, Paediatric Symptom Checklist (PSC-17) and the Strengths and Difficulties Questionnaire (SDQ) and General Health Questionnaire (GHQ) scales were used. Results of the study indicate Psychosocial morbidity was higher in children with TM and their caregivers. [60]

Chong, T. L., et al., (2019) conducted a study on "The relationship between psychological distress and religious practices and coping in Malaysian parents of children with thalassemia", data were gathered from a total of 162 parents, and the research employed the General Health Questionnaire-12 (GHQ-12), the Duke University Religion Index (DUREL), and the Brief RCOPE. The study's results revealed that these parents indeed experienced psychological distress. Importantly, they tended to rely more on positive religious coping methods than negative ones. Furthermore, the study established a significant connection between psychological distress and various aspects of religious engagement, including organized religious activities, non-organized religious activities, as well as both positive and negative religious coping methods. [61]

DEPRESSION

Depression is characterized by persistent feelings of sadness or emptiness and a lack of interest in once enjoyable activities. Individuals experiencing depression often undergo substantial distress as they struggle to engage fully in their daily lives due to a loss of motivation.

Mikelli A, et. al., (2004) conducted a study on "Brief report: Depressive symptoms and quality of life in adolescents with b-thalassaemia", a total of 136 subjects of 12–16 years participated. Beck Depression Inventory (BDI) and Short Form-36 (SF-36) scales were used. Results of the study indicate that the presence of depressive symptoms had an influence on the quality of life of thalassaemic adolescents. [62]

Sabry N, et. al., (2009) conducted a study on “Cognitive abilities, mood changes and adaptive functioning in children with β thalassaemia”, 200 children of age 5 to 15 years participated. The Children's Depression Inventory (CDI), Vineland Adaptive Behavior Scale and WISC-III-R 3rd edition scales were used. Result of the study indicate that their adaptive performance is compromised in all domains and they have three times more depressive symptoms than normal control population.[17]

Yengil E, et. al., (2014) conducted a study on “Anxiety, depression and quality of life in patients with beta thalassemia major and their caregivers”, a total of Ninety patients with BTM and 67 caregivers above age 12 years participated. Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). And Short Form-36 (SF-36) scales were used. Result of the study indicate BTM leads to an increase in the frequency of depression and anxiety in both patients and their caregivers, and has a negative impact on the physical and mental components of quality of life. [63]

Behrouzian F, et. al., (2014) conducted a study on “Relationship of coping mechanism of mothers with mental health of their major thalassemic children”, a total of 36 patients with TM and their mothers age 12-16 years participated. coping styles questionnaire (CSQ) (for mothers), and SCL90-R questionnaire (for children) scales were used. The study's findings showed that 91.2% of children with thalassemia experienced psychosocial issues. A substantial positive association between mothers' maladaptive coping mechanisms and the psychological issues of their kids was discovered. [64]

In a 2015 research study conducted by Fatemeh Behdani et al., on "Psychological Aspects in Children and Adolescents with Major Thalassemia: A Case-Control Study," a total of sixty participants with major thalassemia and sixty healthy subjects, all aged between 7 and 18 years, were included. The study utilized various assessment tools,

including the Pediatric Quality of LifeTM (PedsQL™), Strengths and Difficulties Questionnaires (SDQ), State and Trait Anxiety measures, and the Children's Depression Inventory (CDI). The study's findings revealed significant differences in depression, anxiety, quality of life, and behavioral assessments between children with major thalassemia and their healthy counterparts. In essence, children with major thalassemia exhibited a higher prevalence of psychological issues compared to their healthy peers. [65]

In the study conducted by V Venty et. al., (2018) on “Depression in children with thalassemia major: prevalence and contributing factors”, a total of 64 patients aged 7 to less than 18 years old were included. The Children’s Depression Inventory (CDI) questionnaire was used. The result indicates that the occurrence of depression among children diagnosed with thalassemia Major stands at 34.4%. This condition is notably linked to lower maternal education levels and the utilization of deferasirox, an iron-chelating medication, in these children. [12]

Örengül, A. C., (2018) conducted a study on “Prevalence of psychiatric disorders and suicidality among children and adolescents with thalassemia major—A Turkish sample”. The research involved 59 children, with 33 males and 26 females, all of whom had transfusion-dependent Thalassemia Major and were between the ages of 6 and 17 years. The study used a semi-structured interview called K-SADS and the Children's Depression Inventory (CDI) to assess their mental health. The findings revealed that 4 of the participants were diagnosed with major depressive disorder. Additionally, 24 participants showed symptoms of depressed mood and irritability, while 23 participants exhibited signs of anhedonia and boredom. Suicidal thoughts were more common, observed in 28.8% of the children, compared to suicidal intentions (5.1%) and actual suicide attempts (1.7%). The study suggests that children with Thalassemia Major might be an overlooked group at risk for subclinical forms of depression and suicidality. [66]

FAMILY FUNCTIONING

A child's significant illness can trigger a crisis within the family, impacting its dynamics at various stages of the illness. The chronic nature of the illness often disrupts the family structure profoundly. This disruption involves letting go of previous hopes and dreams, replaced by a landscape of uncertainties and painful expectations of limitations and reduced opportunities for the affected child. Families also face the challenge of adapting to numerous changes in their routines and habits to accommodate the demands imposed by the illness.

In the study conducted by Canatan D, et. al., (2003) on “Psychosocial burden of β-thalassemia major in Antalya, South Turkey”, a total of 99 children and 32 adults with thalassemia major, as well as 112 parents of patients, took part in the study. Pediatric patients ranged in age from 1 to 15 years, while adult participants ranged from 16 to 27 years. A standardized questionnaire used in the interviews with patients and parents was created to gauge the psychosocial burden of the thalassaemia. The results show that the majority of school-age thalassaemic children had their education impacted, primarily because they had to visit the hospital for testing and blood transfusions. Parental anxiety was found to be very high. Due to thalassemia, over half of the families experienced difficulties with their jobs and finances, Nevertheless, the percentage of divorces was modest. If the parent couples had known the fetus had thalassemia major, a significant majority would have decided to end the pregnancy. [67]

In a study conducted by A Ismail, et al., (2006) on “Health related quality of life in Malaysian children with thalassaemia”. 96 individuals with thalassaemia, along with 235 healthy individuals serving as controls, were included as participants within the age range of 5 to 18 years. The researchers utilized the PedsQL 4.0 Generic Core Scales to assess various aspects of their well-being. The study's findings revealed that thalassaemia exerts a detrimental influence on the perceived physical, emotional, social, and school-related functioning of

thalassaemia patients. Notably, these negative impacts were found to be more pronounced in thalassaemia patients compared to their healthy peers of the same age. [68]

Khairkar P, et al., (2010) conducted a study on “Growing up with the families of β-thalassaemia major using an accelerated longitudinal design”, a total of 100 children and 150 parents were included in the study. They were divided into three groups each consisting of 50 individuals. These groups were separated by an age gap of 5-7 years. The mean ages of C2 and C3 were 7.5 ± 1.1 and 12.6 ± 1.4 year respectively; while mean age in the parental groups were 27 ± 7.2, 31 ± 4.4 and 39 ± 5.0 year respectively. Various scales and questionnaires, including the Childhood Psychopathology Measuring Scale (CPMS), KIDCOPE, Malin's Intelligence Scale for Children (MISIC), Quality of Life Scale (PedsQoL), Comprehensive Psychopathology Rating Scale (CPRS), Ways of Coping, Wechsler Intelligence Scale-R, Reaction to Illness Questionnaire, and WHO Quality of Life (WHOQOL), were administered to assess both children and parents. The results revealed that 54 percent of the children exhibited significant psychopathological issues. Among the parental groups, 10 percent were diagnosed with adjustment disorders, 33.3 percent with depressive disorders, 10 percent with anxiety disorders, and 11 percent with somatoform disorders. Additionally, 95 percent of the parents of newly diagnosed children reported feelings of being dazed and shocked, fear of death, hopelessness, separation anxiety, and difficulties with memory and concentration. Significant differences were observed only in the domain of psychological health among the three parental groups concerning their quality of life. [69]

In a study conducted by Thavorncharoensap M, et al., (2010) on “Factors affecting health-related quality of life in Thai children with thalassemia”, 330 children of age 2 to 18 years participated. A Paediatric Quality of Life Inventory™ (PedsQL™) 4.0 Generic Core Scale (Thai version) scales were used. Results of the study indicate

that Children with thalassemia have significantly higher psychosocial morbidity. In addition, the study indicated that special care and attention should be given to patients with a severe condition and those who are receiving subcutaneous iron chelation therapy. [70]

Aziz K, et. al., (2012) conducted a study on “Psychosocial problems of Pakistani parents of Thalassemic children: a cross-sectional study done in Bahawalpur, Pakistan,” a total of 100 parents of thalassaemic children participated. The Pediatric Quality of Life Inventory scale was used. The findings of the study indicated a substantial number of parents have psychosocial problems due to the disease of their child.[71]

Suria., et al., (2013) conducted a study on “pilot study on PEDSQL ™ modul impak keluarga among caregivers of children with transfusion dependant thalassemia in hospital usm, Malaysia”, a total of 31 caregivers of transfusion dependant thalassemia children between ages 6 months to 18 years old were taken as participants. The PedsQL Family Impact Module questionnaire scale was used. The result indicates that family income was an important factor affecting parental HRQOL and family functioning in children with transfusion-dependent thalassemia. [72]

Inamdar S, et. al., (2015) conducted a study on “Stress level among caregivers of thalassemia patients”, a total of Thirty-five Care giving parents participated in the study. Zarit Burden Interview scale were used. The study's findings showed that the parents' psychosocial burden was (60.6%).[27]

Anum J, (2016) conducted a study on “Caregiver burden, spirituality, and psychological well-being of parents having children with thalassemia”, a total of 80 parents with thalassemia-diagnosed children participated in the study. Montgomery–Borgatta burden measure, Multidimensional Measure of Islamic Spirituality and Ryff Scale of

Psychological Well-being scales were used. Results indicated that the carer load had a negative relationship with the psychological well-being and the domains of spirituality, whereas the psychological well-being and spirituality were positively correlated. [73]

Keshvari M, et. al., (2016) conducted a study on the “Relation between children’s well-being and family function in children with thalassemia major in Isfahan in 2013”, a total of 97 children of 10-16 years with thalassemia participated. Adolescent Psychological Wellbeing Scale and Family Functioning Questionnaire scales were used. The study's findings indicate a significant connection between familial functioning and emotional well-being in children with thalassemia major. [74]

Deepak SS, et. al., (2017) conducted a study on “Assessment of Psychosocial Impact on Parents of Thalassaemic Children”, a total of 84 children of 3-14 years and their parents participated, PedsQL Family impact Module questionnaire scale was used. The study's findings suggest that the presence of Thalassemia diagnosis has notably hindered the psychosocial well-being of parents with affected children.[75]

Thiyagarajan A, et. al., (2019) conducted a study on “Assessing the role of family well-being on the quality of life of Indian children with thalassemia”, involved the participation of 250 children and their parents. KIDSCREEN-10 and Ryff Psychological well-being scales were used. The results show that there is a favourable association between parent psychological well-being and children's health-related quality of life. [76]

Sahu S, (2022) conducted a study on “Quality of Life Among Parents of Children Having Thalassemia Versus Leukemia – A Comparative Study". The study comprised 100 parents of children with thalassemia and leukaemia, who were divided into four groups of 25. The average ages for fathers, mothers, and children were 43.4 ± 6.5, 38 ± 6.5, and

12.7 ± 4.4 years, respectively. The researchers utilized the Pediatric Quality of Life Inventory (PedsQL) Family Impact Module Scale questionnaire to gather data. The findings revealed that both groups, representing parents of children with thalassemia and leukemia, displayed an overall quality of life (QOL) that could be categorized as average to poor. Importantly, no significant differences were observed in the QOL between the two groups. [77]

BEHAVIOURAL PROBLEMS

“A behaviour problem is any excessive behaviour which chronically and markedly differs from normal and expected appropriate behaviour of a given age, group or society, which significantly interferes with the child's growth and development as well as others' development, preventing the child from being “happy and building and maintaining satisfying interpersonal relationships with peers and adults. But the child can learn more socially acceptable and personally gratifying behaviour”. [33]

In a study conducted by Aydinok Y, et. al., (2005) on “Psychosocial implications of Thalassemia Major”, a total of 38 patients with TM aged between 6 and 18 years and their mothers participated. The Child Behaviour Checklist (CBCL) and Symptom Distress Checklist 90 (SCL-90) measures were utilised in this investigation. The findings revealed that the patients and their parents, who were more aware of the disease, were more worried but more compliant with the therapy and need stronger psychiatric support. [78]

Shaligram, D. et al. (2007) did a research on “Psychological Problems and Quality of Life in Children with Thalassemia”, a total of Thirty-nine children (8-16 years) with transfusion dependent thalassemia attending day care services for blood transfusion participated. The Childhood Psychopathology Measurement Schedule (CPMS), Child Behavior Checklist (CBCL), and the Quality of Life (QOL) was examined using the EQ-5D. The findings reveal that Anxiety-related symptoms,

emotional problems, particularly depression, and conduct problems were the significant findings. children were most likely to report decreased QOL as a result of severe difficulties in the pain/discomfort category, followed by depression and mobility problems of equal severity. [79]

Saini, A. et al. (2007) did a research on “Case Control Study of Psychosocial Morbidity in beta Thalassemia Major”. Sixty children of age 5 to 15 years with transfusion-dependent thalassemia major and matched age group and social background with control group participated. A interview that was semi-structured was conducted in conjunction with the Paediatric Symptom Checklist [PSC] and Childhood Psychopathology Measurement Schedule [CPMS] measures. The findings of the study suggest that children with thalassemia have significantly higher psychosocial morbidity. [80]

Cakaloz, B., (2009) did a research on “Psychopathology in thalassemia major”, that included 20 thalassaemic children (13 girls and 7 boys) ages 7 to 18 and a control group of 34 healthy children (19 girls and 15 boys) in the same age range. A semi-structured interview was conducted using the Child Behaviour Checklist (CBCL) and the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSMIV) diagnosis guidelines. The findings demonstrate that, as contrasted with the control group, the percentage of children with thalassaemia major who received a mental diagnosis increased dramatically. Anxiety disorders were present in around 30% of thalassemic children, whereas depressive disorders were seen in 15%. Children with thalassaemia major had higher T scores than children in the control group on the child behaviour check-list, which indicated internalising issues, externalising problems, attention problems, and social problems. In compared to the controls, the thalassaemia major group had significantly worse problems with peer interactions and academic performance. [81]

Hongally C, et. al., (2012) performed a research on “Study of behavioural problems in multi-transfused thalassemia”, in which of fifty multi-transfused thalassaemic children, aged 5–10 years participated. Child Behaviour Check List (Achenbach) (CBCL) and Parental Attitude Scale scales were used. The study's findings show that older children, those with weaker academic achievement, and those whose mothers had more advanced educational levels, combined with a familial history of thalassemia and lower pre-transfusion hemoglobin levels, had longer absences from educational institutions and higher CBCL scores. [82]

In a study titled "Impact of psychosocial status and disease knowledge on deferoxamine adherence among thalassaemia major adolescents" conducted by Ibrahim Al-Kloub et al. (2013), thirty-six adolescents aged 12 to 19 years were included. The research utilized the Disease Knowledge about Thalassaemia Major (DKTM) questionnaire and the Pediatric Symptom Checklist (PSC). Significant factors linked with psychological distress were identified, including adolescents over 16 years old, poor adherence to deferoxamine treatment, elevated mean ferritin levels exceeding 2500 µg/L, families with more than six members, family income equal to or less than 350 Jordanian dinars, and having a sibling with thalassemia. Additionally, adolescents with a high level of knowledge about thalassemia major exhibited lower scores on the Pediatric Symptom Checklist, Families with no fewer than six people, a household income of 350 Jordanian dinars or less, and a sibling with thalassemia. Additionally, adolescents with a high level of awareness of thalassemia major scored lower on the Paediatric Symptom Checklist. [83]

Elzaree FA, et. al., (2018) conducted a study on “Adaptive functioning and psychosocial problems in children with beta-thalassemia major”, a total of 100 children participated in a study of 5-17 years. Vineland Adaptive Functioning Scale and Paediatric Symptom Checklist (PSCL) scales were used. Results indicate that Thalassaemic patients had a relatively mild affection for adaptive and psychosocial functioning that

can be explained by the social and medical support they receive, which may increase their competence and psychological well-being. [84]
In a study by Güneş et al. (2019) titled "Sleep problems in children and adolescents with β-thalassemia major", a cohort of 144 participants aged 8 to 16 years took part. The study utilized the Children's Sleep Habits Questionnaire (CSHQ). Findings from the research suggested a positive association between β-thalassemia major and sleep issues among children and adolescents. [85]

Sen S, et al., (2019) carried out a study on "G535 Evaluation of mental health among thalassemia patients and their siblings using paediatric symptom checklist (psc-17) questionnaire". During the study, 46 thalassemia patients (26 males and 20 females) across the ages of 1 to 14 years and 92 siblings (54 males and 38 females) of comparable ages were screened. They tested during a two-month period using the Paediatric Symptom Checklist (PSC-17). The findings illustrate that 20 individuals tested positive for internalising (anxiety or mood) disorders, with an additional 7 testing positive for externalising (conduct, oppositional defiant, adjustment, or mixed disturbed mood or conduct) disorders. On subgroup analysis, none of the patients under the age of six were tested positive; nevertheless, mental health difficulties were observed in 83% of individuals older than six years. [86]

A recent study by Sahu et al. (2023) investigated "Psychiatric disorders and caregiver burden in children with transfusion-dependent β-thalassaemia and their caregivers". The study involved 46 children (comprising 28 boys and 18 girls) with this medical condition and 46 parents (including 12 fathers and 34 mothers). Parents were asked to complete two different questionnaires. The first questionnaire, known as the Pediatric Symptom Checklist-35 (PSC-35), assessed the parents' understanding of their children's psychosocial well-being. The Caregiver Burden Scale (CBS) was utilized as the second questionnaire to assess the amount of burden experienced by these caregivers. The study's results showed that more than 32% of the

children screened positive for psychosocial issues when evaluated using the PSC-35. When evaluated through the CBS, the parents reported experiencing moderate caregiver burden in various domains, including general strain, isolation, disappointment, emotional involvement, and the overall caregiving environment. Furthermore, the study indicated that 65.3% of the children and 62.7% of the parents were diagnosed with psychiatric problems. [87]

COPING STRATEGIES

According to Folkman et al., (2004) and Venner (1988), Coping is defined as the thoughts and behaviors mobilized to manage internal and external stressful situations. It is a term used distinctively for conscious and voluntary mobilization of acts, different from 'defense mechanisms' that are subconscious or unconscious adaptive responses, both of which aim to reduce or tolerate stress.

Goldbeck L, et. al., (2000) conducted a study on “Psychosocial aspects of beta-thalassemia: distress, coping and adherence”, a total of 43 patients with TM between 3 to 26 years participated. The Ulm Thalassemia Inventory, the KIDCOPE, the Multidimensional Health Locus of Control measures and the Giessen Complaint List measures were utilised in the research. According to the study's findings, patients frequently suffer more anguish from their therapy than from their sickness itself. When it comes to coping mechanisms, they predominantly rely on maladaptive strategies compared to other clinical groups. [88]

Fung et. al., (2008) conducted a study on “Psychological Vulnerability and Resilience in Children and Adolescents with Thalassaemia Major”, a total of 73 patients were included with TM from ages under 6 to 18 years. Semi- structured interviews, Wechsler intelligence scales- 2 subtests, and conceptual scales of coping described by Carver et. al., were used. Results indicate variations in coping strategies across various developmental stages. Younger individuals showed a

preference for active coping methods and relied more heavily on seeking assistance from others. Conversely, older subjects tended to employ more cognitive strategies, endeavoring to manage their negative emotions by embracing more positive thinking patterns. These differences in coping approaches were suggested to potentially mirror the diverse nature of challenges encountered by individuals across different age groups.[89]

Ali A. (2016) and colleagues did a study on "coping strategies among children with thalassemia" in which 300 thalassaemic children aged 12-18 years participated. The Children's Coping Strategies Checklist-Revision 1 (CCSC-R1) scale was utilised. The study found a relationship between techniques for coping and improving the overall well-being of children with thalassemia. [25]

A study conducted by Abbasi et. al., (2020) on “The Relation between Different Aspects of Quality of Life with Coping Style in Adolescents with Thalassemia in Comparison to a Healthy Group”. In this study, 200 adolescents diagnosed with thalassemia were compared with a control group of healthy adolescents. The World Health Organization's Coping Styles and Quality of Life Questionnaire and a checklist of demographic factors were used to collect data for the study. The study found a significant positive association between the average quality of life score and its various components (physical, social, and mental) when using an emotion-oriented coping style ($p<0.01$). Furthermore, while using a problem-oriented coping strategy, there was a clear and significant relationship between the overall quality of life score and its social and physical aspects. [90]

A study by Parviniannasab et al., (2021) conducted on “The relationship between coping strategies and resilience among adolescents with beta-thalassemia major”. The research involved 134 adolescents aged 11 to 21 years diagnosed with beta-thalassemia major. The study utilized the Jalowiec Coping scale and the Connor-Davidson resilience scale as assessment tools. The results of this investigation highlighted that courageous coping mechanisms played a significant role in enhancing resilience among the participants. Conversely, the adoption of defensive coping strategies was identified as a factor contributing to lower-than-optimal levels of resilience in these individuals. [91]

MATERIALS AND METHODS

RESEARCH DESIGN:

The study employed the cross-sectional study design, in which the investigator measured the outcome and the exposure in the study participants at the same time. In this design, the participants were selected based on the inclusion and exclusion criteria set for the study. The investigator followed the study to assess the exposure and the outcome.

SOURCE OF DATA

The present study was conducted on 150 healthy controls and 75 children diagnosed with transfusion-dependent thalassemia attending a Thalassemia Day Care Centre at Dayanand Medical College and Hospital, Ludhiana. The healthy control population was taken from local schools.

METHOD OF COLLECTION OF DATA

SAMPLE COLLECTION:

The sample consisted of 225 children out of which 75 were diagnosed with transfusion-dependent thalassemia and 150 health controls. The purposive sampling Method was used for the purpose of sample selection. The selection of participants was done on the basis of the inclusion criteria and exclusion criteria mentioned below. The healthy controls were matched for age, gender and education.

INCLUSION CRITERIA

EXPERIMENTAL GROUP (Children with Transfusion-Dependent Thalassemia)

- Diagnosis of Transfusion dependent Thalassemia by Primary Physician.
- Aged Between 8 To 16 Years of either gender
- Caregiver willing to give informed consent for participation

CONTROL GROUP (Healthy Control)

- Children with No Chronic Medical Illness
- Children Aged Between 8 To 16 Years, matched for age, gender, and education.
- Caregiver willing to give informed consent for participation.

EXCLUSION CRITERIA

EXPERIMENTAL GROUP (Children with Transfusion-Dependent Thalassemia)

- Presence of Major psychotic disorder
- History of intellectual disability
- Major neurological disorder, communication, and developmental disorder
- Diagnosis of thalassemia in any other family member
- With any other chronic physical illnesses, or body part amputations

CONTROL GROUP (Healthy Control)

- Presence of Major psychotic disorder
- History of intellectual disability
- Major neurological disorder, communication, and developmental disorder
- With body part amputations

TOOLS FOR ASSESSMENT:

1. Socio-demographic Performa; informed consent
2. Emotion awareness questionnaire
3. General Health Questionnaire-12
4. Pediatric Symptom Checklist
5. PedsQL™ Family Impact Module
6. KIDCOPE
7. Children's Depression Inventory

DESCRIPTION OF THE TOOLS:

1. SOCIO-DEMOGRAPHIC PERFORMA: A semi-structured proforma was designed for the present study to collect a detailed clinical history of each participant including information related to the following areas:

Socio-demographic details including age, gender, MRD number, occupation, education qualification, address, family type, income, socioeconomic status, etc using, Dalvi T. et. al., (2023)[92]

Time since diagnosis, Pharmacological treatment, Mean pre-transfusion Hb, Average requirement of transfusion, Presence of comorbidities

Cost of treatment per month, Time spent in hospital, Cost of travel, and Number of missed school days. Scores of all the tests.

2. Emotion Awareness Questionnaire (EAQ) (Rieffe et al., 2008)[93]: The EAQ was developed by Carolien Rieffe et al., in 2008. Was developed to identify how children and adolescents feel or think about their feelings. It is a self-reporting tool measuring emotion awareness in children and adolescents. In addition, this questionnaire has been translated into many languages (e.g., Arab, Dutch, Farsi, French, Greek, Italian, Spanish, and Turkish). It is a 30-item scale that measures 6 domains Differentiating Emotions, Verbal Sharing of Emotions, Bodily Awareness, Acting Out Emotions, Analyses of Emotions, and Attending to Others 'Emotions.

20 items are reverse coded. Items are scored on a 3-point Likert scale, ranging from 0= not true, 1=sometimes true, 2=true. The highest score to be obtained from the questionnaire is 90, and the lowest score is 30. The internal consistency coefficient calculated for the sub-dimensions of the questionnaire varied between .64 and .68 in the primary school group, it varied between .74 and .77 in the secondary school group. [94]

3. General Health Questionnaire-12 (GHQ-12) (Goldberg et al. 1988) [95]: The GHQ-12 was developed by Goldberg et al. in 1988. It is administered to children aged 7–19 years. It consists of 12 items. It is

divided into 4 subscales: somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression. Each subscale assesses the severity of a mental problem over the past few weeks using a 4-point Likert-type scale (from 0 to 3). The total score ranges from 0 to 36. The positively worded items and the negative worded items. High scores are indicative of poor health. The Cronbach's alpha showed a very good internal consistency of the scale ($\alpha > 0.8$). [96]

4. Pediatric Symptom Checklist (PSC-17) (Gardner W et al. 1999) [97]: The PSC-17 was developed by Gardner W et al., in 1999. It is a 17-item parent-rated questionnaire used to screen for behavioural issues in kids between the age of 4 to 17 years. It has three subscales that assess issues with general childhood attention, disruptive behaviour (externalising behaviour), and internalising issues (depression and anxiety). Parents assign a frequency rating of "never," "sometimes," or "frequently" to the behaviours and symptoms indicated. These answers receive 0-point, 1 point, or 2 points, accordingly. The sum of the individual values for each item yields the final score. After that, this total score is measured against a cutoff (internalisation = 5, externalisation = 7, attention = 7, and total score = 15). The overall score of the PSC-17 shows strong internal consistency reliability (Cronbach's alpha = 0.87) and re-test reliability 0.89. [98]

5. PedsQL™ Family Impact Module (Varni, Sherman, Burwinkle, Dickinson, & Dixon, 2004) [99]: It was developed by James W. Varni, et al., in 2004. It is a 36-item parent report tool that includes six scales for measuring parent self-reported functioning. The subscales of the test are namely: Physical functioning (6 items), Emotional functioning (5 items), Social functioning (4 items), Cognitive functioning (5 items), Communication (3 items), Worry (5 items), and 2 scales for measuring parent-reported family functioning; Daily activities (3 items), and Family relationships (5 items). The test consists of different forms for different age groups (ages 5-7), (ages 8-12), and Teens (ages 13-18) years. Reliability for internal consistency was (= 0.97). A 5-point response

scale is utilized (0 = never a problem; 4 = always a problem). Items are reverse-scored and linearly transformed to a 0–100 scale (0 = 100, 1 = 75, 2 = 50, 3 = 25, 4 = 0), so that higher scores indicate better functioning.

The Module yields 3 summary scores: Total score, Parent health-related quality of life summary score, and Family functioning summary score. The total score is comprised of the average of the responses to all items in the questionnaire. The Parent HRQL summary score is determined by averaging the responses to the 20 items that make up the physical, emotional, social and cognitive functioning scales noted above. The family functioning summary score is determined by averaging the responses to the 8 items that make up the daily activities and family relationships scales. Scale Scores are computed as the sum of the items divided by the number of items answered (this accounts for missing data). If more than 50% of the items in the scale are missing, the Scale Score is not computed.

6. KIDCOPE (Spirito et al., 1988) [24]**:** It was developed by Anthony Spirito et al., in 1988. The KIDCOPE is a comprehensive, self-report assessment of children and adolescents coping mechanisms. The scale comes in two variants younger version for children aged 7 to 12 and older version 13 to 18 years old. This scale includes 15 items for young children and 10 items for older kids. The older version consists of one item for each of 10 coping strategies: Distraction, social withdrawal, wishful thinking, self-criticism, blaming others, problem solving, emotional regulation, cognitive restructuring, social support, and resignation are the 10 general cognitive and behavioural coping categories that make up KIDECOPE. The younger version also has 10 main strategies has 2 items (versus only 1) for several strategies. Each item of the test is scored using a Likert-type scale with a range of “not at all” to “very much”.

The younger version frequency scale children respond either" yes" or "no" and their efficacy scale consist of 3 points ranging from (0: "not at

all" to 2: "a lot"), while older children respond using a 4-point Likert scale (0= "not at all" to 3: "almost all the time"). There was good internal consistency across the 15 elements, Cronbach's alpha (0.89). [100]

7. Children's Depression Inventory (CDI) (Kovacs, 1977)[101]: The CDI was developed by Dr. Maria Kovacs in 1977. it consists of 27 items and is used with children who are between the ages of 7 and 17. The absence, presence, and intensity of the depressive symptom over the previous two weeks are all described in three sentences that make up each item. Each item is scored as 0 (zero), I (one), or 2 (two). The total score for children ranges from 0 to 54 on 27 items. Higher scores indicates increased prevalence and severity of depression symptom. CDI score of 16 or higher show significant level of depressive symptoms. Internal consistency reliability coefficient for the test is in the range of 0.80s. [102]

PROCEDURE:

The study was conducted on 225 children (75 children diagnosed with transfusion-dependent thalassemia and 150 healthy controls). The participants were taken from those attending a Thalassemia Day Care Centre at Dayanand Medical College and Hospital, Ludhiana. The healthy control population was taken from local schools. A written Informed consent was duly signed by all the caregivers of the participants who meet the inclusion criteria and were willing to participate in study. The caregivers were well informed about the confidentiality of their child’s information. After the written consent was taken, basic socio-demographic information was collected about the participant and their family through semi-structured proforma. The socio demographic proforma included the name, age, sex, education, occupation, address, family type, income, socio-economic status, time since diagnosis, pharmacological treatment, mean pre-transfusion Hb, average annual transfusion, presence/absences of comorbidities, cost of treatment per month, time spent in hospital, cost of travel, and

number of missed school days per month. The participants general mental health and depressive symptoms were assessed using General Health Questionnaire-12 (GHQ) and Child Depression Inventory (CDI). Level of emotional awareness and coping strategies were assessed using Emotion Awareness Questionnaire (EWQ) and KidCOPE. Participants externalizing and internalizing behavioural tendencies were assessed using Paediatric Symptom Checklist (PSC-17). PedsQL™ Family Impact Module was administered to assess parent health-related quality of life and Family functioning. The data was collected and assessed using appropriate statistical package.

STATISTICAL ANALYSIS

The formula used to collect sample size was: $n = (\sigma 1^2 + \sigma 2^2) (Z\alpha + Z\beta)^2 / (m1 - m2)^2$ Where, Zα = Value of standard normal variate corresponding to α level of significance (1.96) Zβ = The standard normal deviate for desired power (0.842) m = Average σ = Standard deviation Assumptions: From the study conducted by Raman V, Prakash A, D'Souza F. Psychosocial Issues in Children with Thalassemia: From Identification to a Model for Management in a Developing Country. J Pediatr Hematol Oncol. 2019. the sample size for 95% confidence level & 90% power works out 15 in each group for PSC parameter and 62 in each group for GHQ parameter. This number was increased to 75 to allow for a predicted dropout from treatment in cases and in control to 150 sample size. Ratio was 1:2.

Data were described in terms of range; mean ± standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. To determine whether the data were normally distributed, a Kolmogorov-Smirnov test was used. Comparison of quantitative variables between the study groups was done using Mann Whitney U test. For comparing categorical data, Chi square ($\chi 2$) test was performed and fisher exact test was used when the expected frequency is less than 5. Spearman's rho correlation was

also measured. A probability value (p value)less than 0.05 was considered statistically significant.All statistical calculations were done using (Statistical Package for the Social Science)SPSS 21.0 version (SPSS Inc., Chicago, IL, USA)statistical program for Microsoft Windows.

OBSERVATIONS AND RESULTS

Table 1: Mean age and percentage of the participants in the experimental and control group

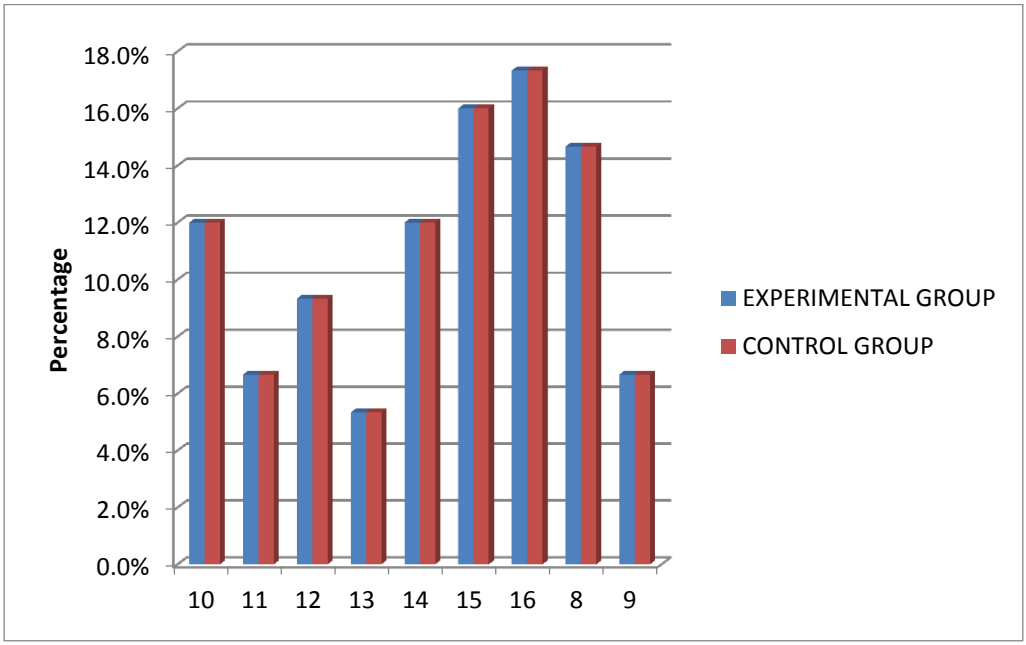
		EXPERIMENTAL GROUP		CONTROL GROUP		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Age	10	9	12.0%	18	12.0%	27	0.001	1.000
	11	5	6.7%	10	6.7%	16		
	12	7	9.3%	14	9.3%	21		
	13	4	5.3%	8	5.3%	11		
	14	9	12.0%	18	12.0%	27		
	15	12	16.0%	24	16.0%	36		
	16	13	17.3%	26	17.3%	39		
	8	11	14.7%	22	14.7%	33		
	9	5	6.7%	10	6.7%	15		
Total		75	100.0%	150	100.0%	225		

(NS: Not Significant, p<0.05)

	EXPERIMENTAL GROUP		CONTROL GROUP		Z	p-value
	Mean	SD	Mean	SD		
Age	12.37	2.87	12.37	2.87	0.001	1.000

(NS: Not Significant, p<0.05)

Figure 1: Mean age and percentage of the participants in the experimental and control group



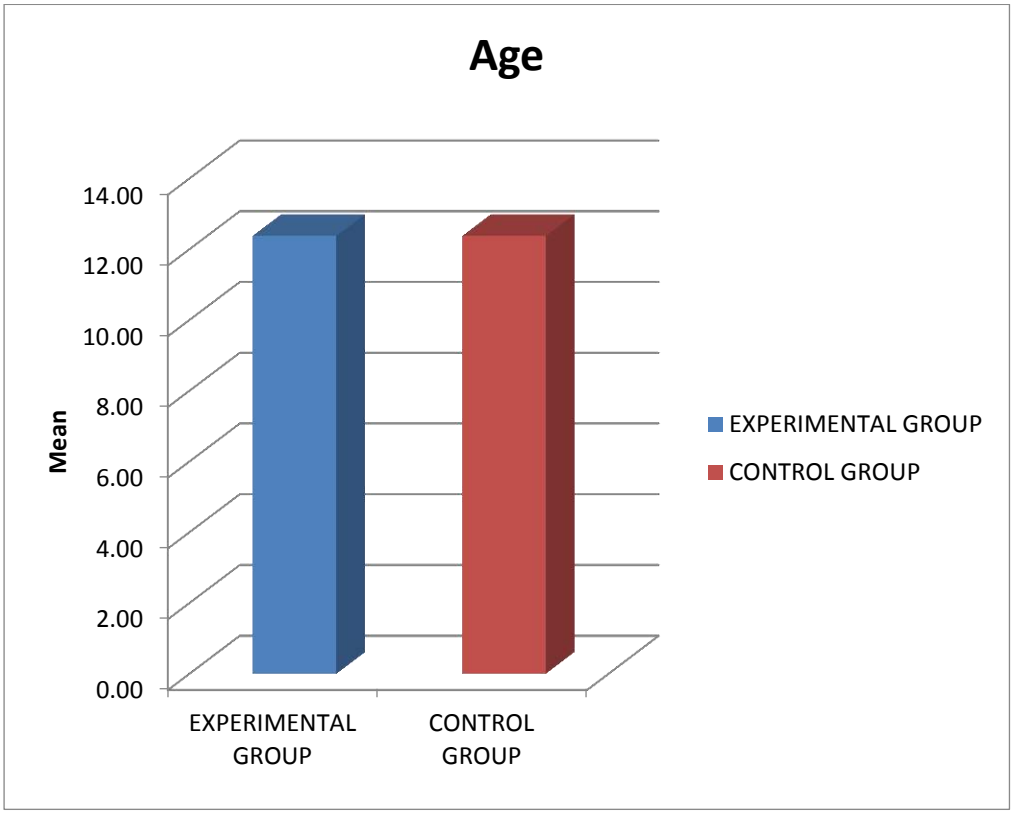


Table 2: Gender distribution of the participants in the experimental and control group

		EXPERIMENTAL GROUP		CONTROL GROUP		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Sex	F	29	38.7%	58	38.7 %	87	0.001	1.000
	M	46	61.3%	92	61.3 %	138		
Total		75	100.0%	150	100.0 %	225		

(NS: Not Significant, p<0.05)

Figure 2: Gender distribution of the participants in the experimental and control group

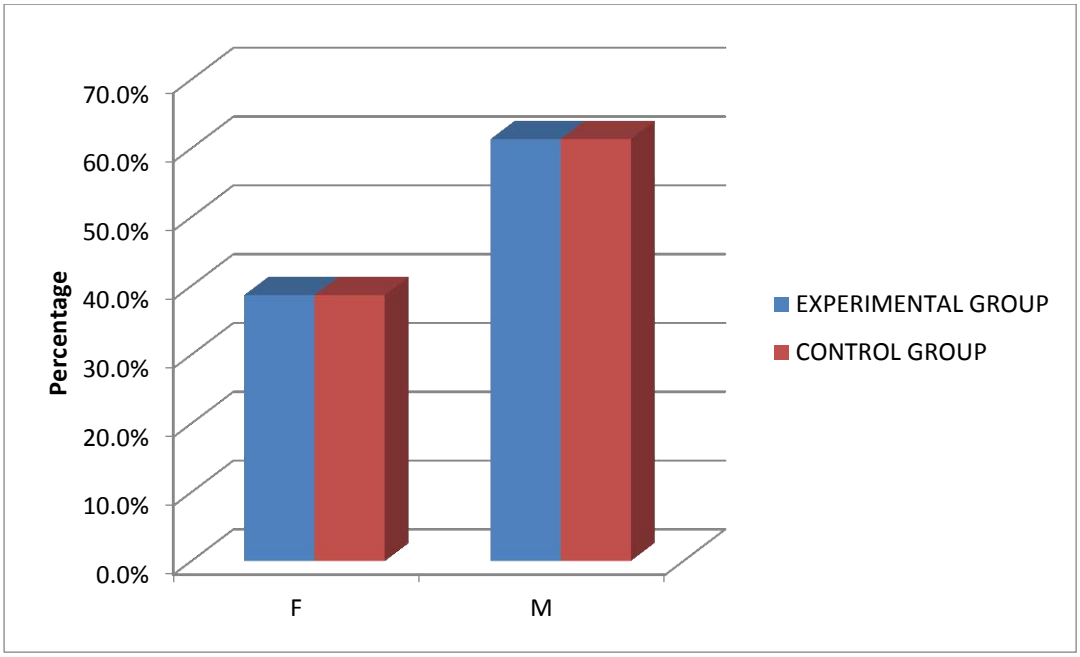


Table 3: Distribution of participants based on educational qualification in the experimental and control group

		EXPERIMENTAL GROUP		CONTROL GROUP		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Education	High School	23	30.7%	52	34.7%	75	0.382	0.826
	Middle School	24	32.0%	44	29.3%	68		
	Primary school	28	37.3%	54	36.0%	82		
Total		75	100.0%	150	100.0%	225		

(NS: Not Significant, p<0.05)

Figure 3: Distribution of participants based on educational qualification in the experimental and control group

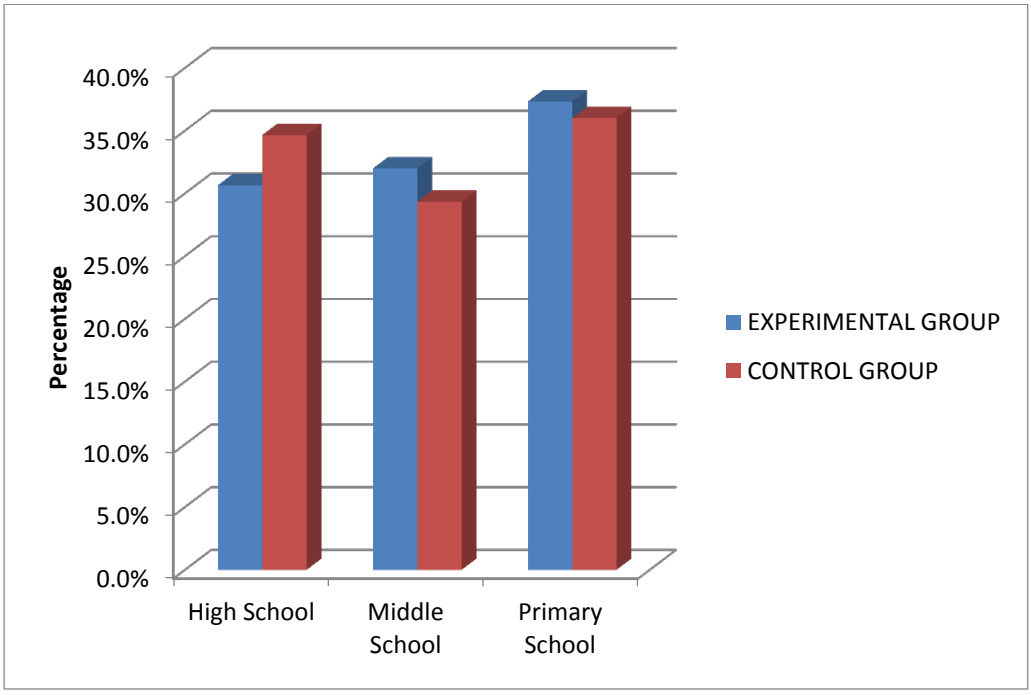


Table 4: Distribution of participants based on residence in the experimental and control group

		EXPERIMENTAL GROUP		CONTROL GROUP		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Address	Rural	22	29.3%	29	19.3%	51	2.852	0.091
	Urban	53	70.7%	121	80.7%	174		
Total		75	100.0%	150	100.0%	225		

(NS: Not Significant, p<0.05)

Figure 4: Distribution of participants based on residence in the experimental and control group

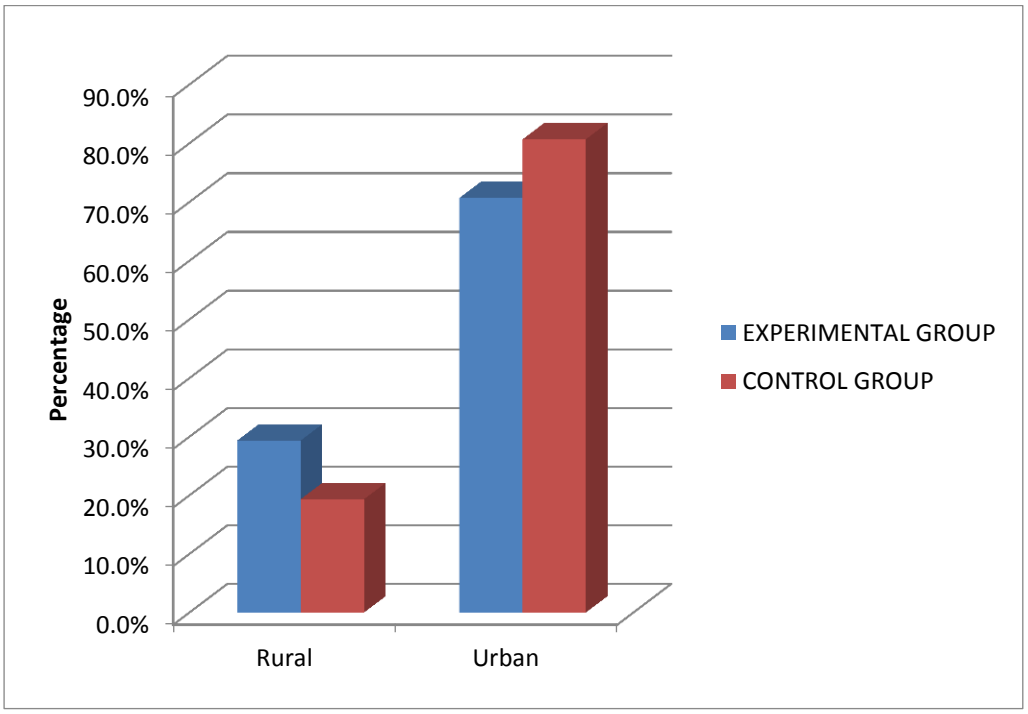


Table 5: Distribution of the family type of the participants in the experimental and control group

		EXPERIMENTAL GROUP		CONTROL GROUP		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Family Type	Joint	36	48.0%	70	46.7%	106	0.036	0.850
	Nuclear	39	52.0%	80	53.3%	119		
Total		75	100.0%	150	100.0%	225		

(NS: Not Significant, p<0.05)

Figure 5: Distribution of the family type of the participants in the experimental and control group

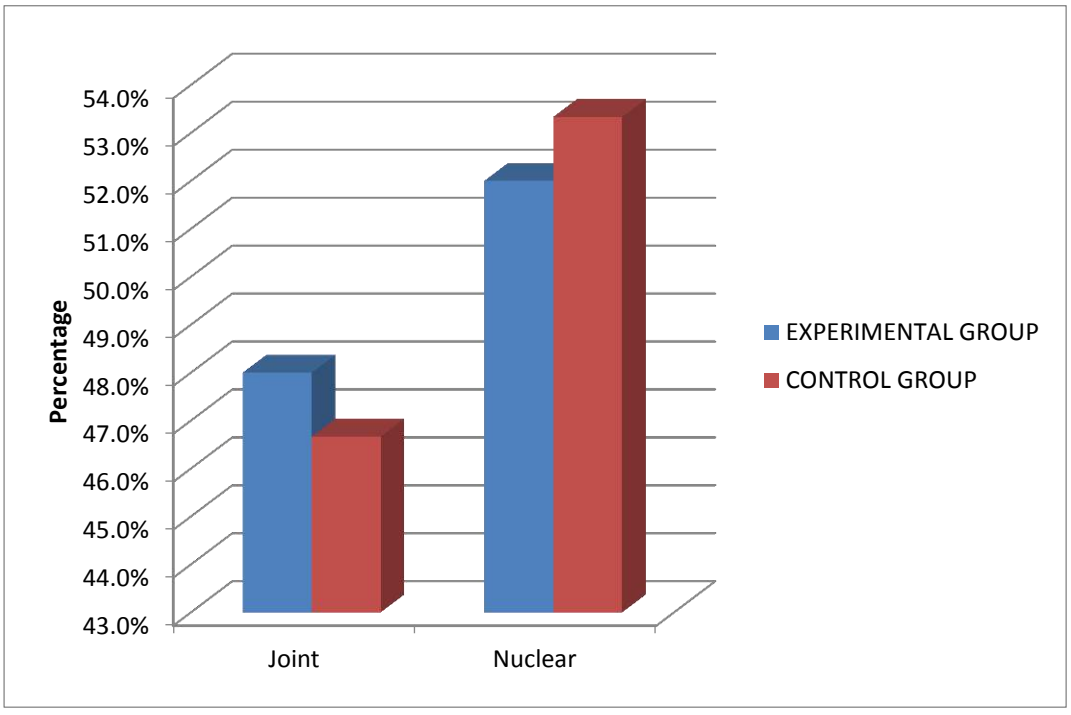


Table 6: Distribution of the socio-economic status of the participants in the experimental and control group

		EXPERIMENTAL GROUP		CONTROL GROUP		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
SES	LOWER-CLASS	1	1.3%	0	0.0%	1	9.017	0.061
	LOWER-MIDDLE CLASS	9	12.0%	8	5.3%	17		
	UPPER-CLASS	19	25.3%	52	34.7%	71		
	UPPER-LOWER CLASS	2	2.7%	12	8.0%	14		
	UPPER-MIDDLE CLASS	44	58.7%	78	52.0%	122		
Total		75	100.0%	150	100.0%	225		

(NS: Not Significant, p<0.05)

Figure 6: Distribution of the socio-economic status of the participants in the experimental and control group

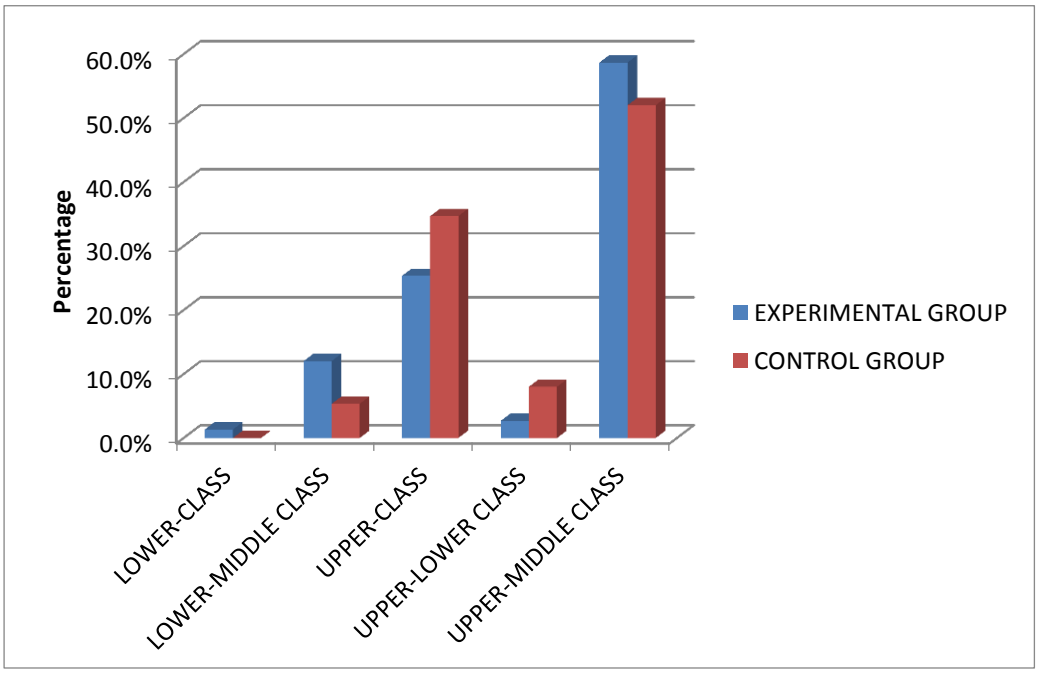


Table 7: Treatment issues faced by patients with transfusion-dependent TM

		Mean pre-transfusion HB	Average Requirement HB	Cost of treatment	Time Spent in Hospital	Cost of Travel	Missed School days	Time since Diagnosis	Diagnosis Age
N	Valid	75	75	75	75	74	75	75	75
Mean		9.08	214.21	6983.33	1.71	1138.51	2.04	11.39	0.98
Std. Deviation		0.64	71.43	5246.35	0.67	1639.11	0.96	3.20	1.16
Minimum		7.73	6.60	2000.00	1.00	100.00	1.00	4.00	0.00
Maximum		10.30	364.00	30000.00	4.00	12000.00	7.00	16.00	5.00
Percentiles	25	8.70	192.00	4000.00	1.00	400.00	2.00	9.00	0.00
	50	9.10	230.00	5000.00	2.00	600.00	2.00	12.00	0.70
	75	9.50	258.00	8000.00	2.00	1050.00	2.00	14.00	1.00

Figure 7: Treatment issues faced by patients with transfusion-dependent TM

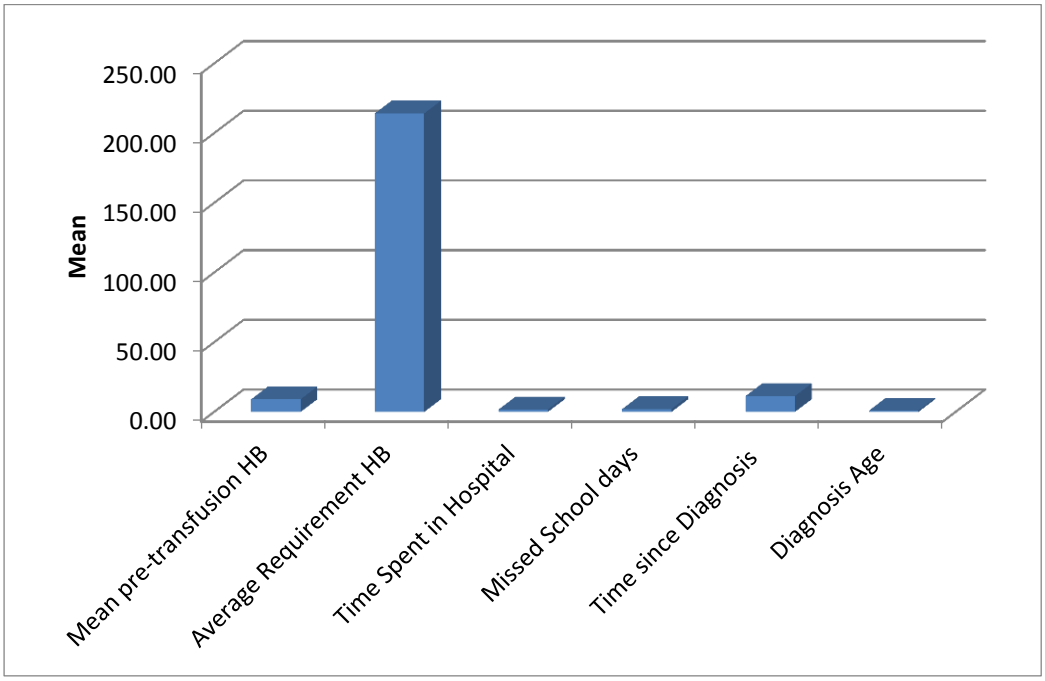


Table 8: Distribution of cases based on time spent in the hospital per month for the experimental group

Time Spent in Hospital	No. of cases	Percentage
1	30	40.0%
2	38	50.7%
3	6	8.0%
4	1	1.3%
Total	75	100.0%

Figure 8: Distribution of cases based on time spent in the hospital per month for the experimental group

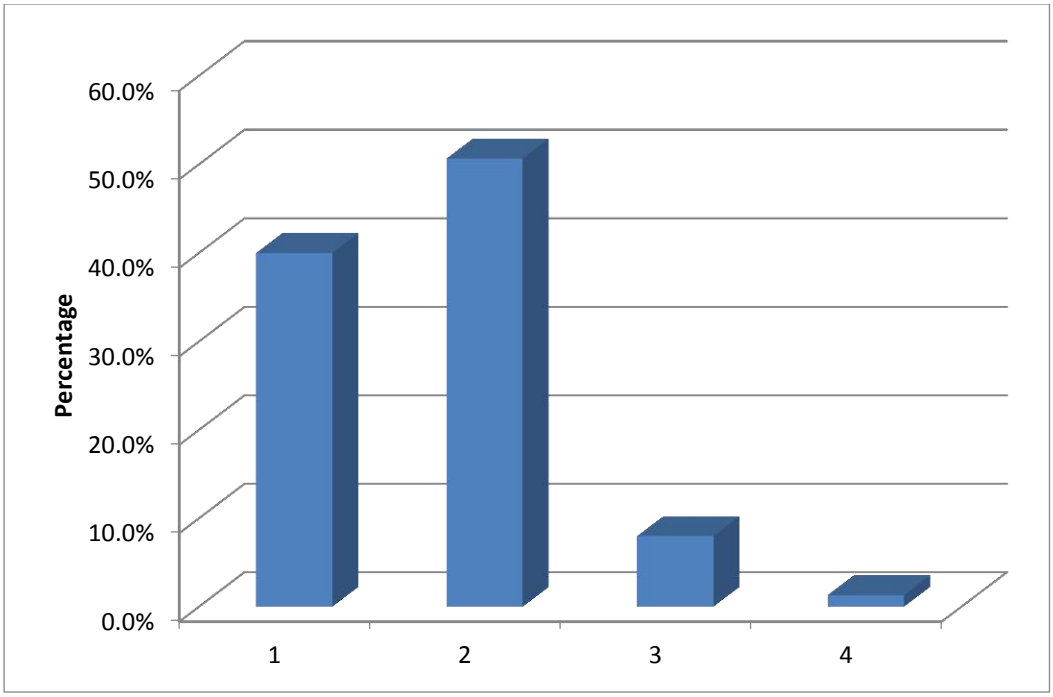


Table 9: Distribution of cases based on the number of missed school days per month among the experimental group

Time Spent in Hospital	No. of cases	Percentage
1	30	40.0%
2	38	50.7%
3	6	8.0%
4	1	1.3%
Total	75	100.0%

Figure 9: Distribution of cases based on the number of missed school days per month among the experimental group

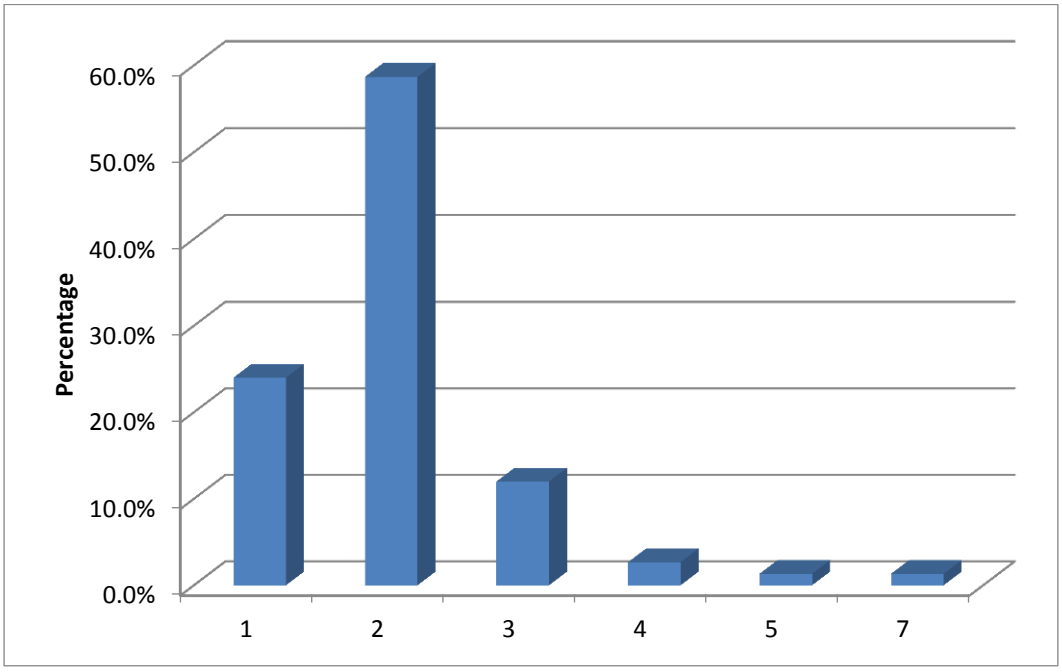


Table 10: Distribution of comorbidities in children with Transfusion-Dependent TM

Comorbidities	No. of cases	Percentage
Serum ferritin level	14	18.7%
Liver iron overload	36	48.0%
Delayed puberty	16	21.3%
Osteopenia	17	22.7%
Osteoporosis	5	6.7%
Hypothyroidism	14	18.7%
Myocardial iron overload	5	6.7%
Hepatitis C	3	4.0%
HCV +	1	1.3%
Eye fundus	1	1.3%
Hearing loss	1	1.3%
Creatinine level	1	1.3%
Hypocalcaemia	2	2.7%
Increased size of liver and spleen	1	1.3%

Figure 10: Distribution of comorbidities in children with Transfusion-Dependent TM

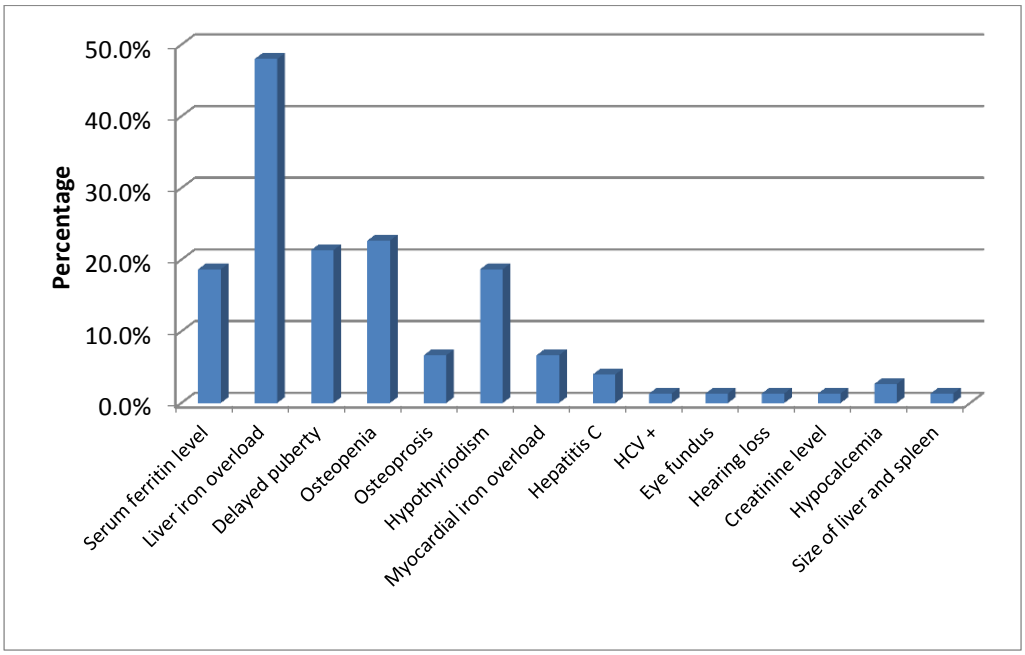


Table 11: Distribution of Pharmacological Treatment used in the Experimental group

Pharmacological Treatment	No. of cases	Percentage
DFO/DFX	1	1.3%
DFX	26	34.7%
DFX/DFP	33	44.0%
DFX/Hb inducer	14	18.7%
DFX/Thyronorm	1	1.3%
Total	75	100.0%

Figure 11: Distribution of pharmacological treatment used in the experimental group

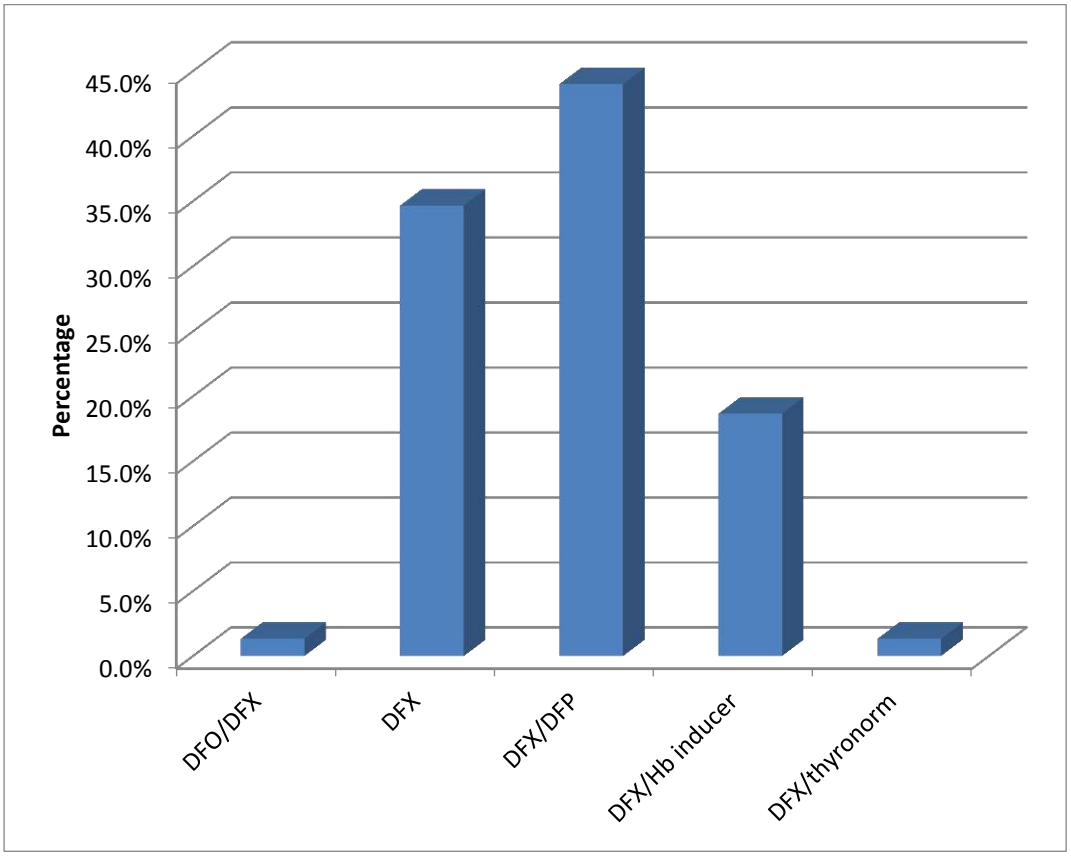


Table 12: Comparative distribution of coping strategies in children with transfusion-dependent TM and control group

		EXPERIMENTAL GROUP		CONTROL GROUP		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Distraction F	0	5	6.7%	12	8.0%	17	2.765	0.429
	1	25	33.3%	38	25.3%	63		
	2	39	52.0%	79	52.7%	118		
	3	6	8.0%	21	14.0%	27		
Distraction E	0	1	1.3%	12	8.0%	13	9.678	0.085
	1	20	26.7%	26	17.3%	46		
	2	19	25.3%	27	18.0%	46		
	3	18	24.0%	54	36.0%	72		
	4	12	16.0%	21	14.0%	33		
	NA	5	6.7%	10	6.7%	15		
Social Withdrawal F	0	26	34.7%	22	14.7%	48	15.001	0.005
	1	25	33.3%	49	32.7%	74		
	2	19	25.3%	55	36.7%	74		
	3	5	6.7%	22	14.7%	27		
	4	0	0.0%	2	1.3%	2		
Social Withdrawal E	0	5	6.7%	14	9.3%	19	22.302	0.001
	1	19	25.3%	39	26.0%	58		
	2	16	21.3%	24	16.0%	40		
	3	7	9.3%	26	17.3%	33		
	4	2	2.7%	25	16.7%	27		
	NA	26	34.7%	22	14.7%	48		
Cognitive restructuring F	0	10	13.3%	14	9.3%	24	4.986	0.289
	1	46	61.3%	83	55.3%	129		
	2	13	17.3%	25	16.7%	38		
	3	6	8.0%	27	18.0%	33		
	NA	0	0.0%	1	0.7%	1		

Cognitive restructuring E	0	2	2.7%	9	6.0%	11	40.701	0.001
	1	23	30.7%	46	30.7%	69		
	2	22	29.3%	42	28.0%	64		
	3	17	22.7%	14	9.3%	31		
	4	1	1.3%	25	16.7%	26		
	na	0	0.0%	13	8.7%	13		
	NA	10	13.3%	1	0.7%	11		
Self-criticism F	0	45	60.0%	47	31.3%	92	17.633	0.001
	1	20	26.7%	74	49.3%	94		
	2	7	9.3%	18	12.0%	25		
	3	3	4.0%	10	6.7%	13		
	N	0	0.0%	1	0.7%	1		
Self-criticism E	0	9	12.0%	30	20.0%	39	22.015	0.001
	1	7	9.3%	42	28.0%	49		
	2	9	12.0%	17	11.3%	26		
	3	4	5.3%	12	8.0%	16		
	4	1	1.3%	4	2.7%	5		
	NA	45	60.0%	45	30.0%	90		
Blaming others F	0	33	44.0%	52	34.7%	85	3.884	0.274
	1	34	45.3%	68	45.3%	102		
	2	6	8.0%	20	13.3%	26		
	3	2	2.7%	10	6.7%	12		
Blaming others E	0	11	14.7%	20	13.3%	31	6.949	0.224
	1	22	29.3%	42	28.0%	64		
	2	7	9.3%	25	16.7%	32		
	3	2	2.7%	13	8.7%	15		
	4	0	0.0%	1	0.7%	1		
	NA	33	44.0%	49	32.7%	82		
Problem solving F	0	4	5.3%	5	3.3%	9	2.596	0.628
	1	24	32.0%	55	36.7%	79		
	2	40	53.3%	79	52.7%	119		
	3	7	9.3%	9	6.0%	16		
	4	0	0.0%	2	1.3%	2		

Problem solving E	0	2	2.7%	17	11.3%	19	14.123	0.015
	1	8	10.7%	37	24.7%	45		
	2	28	37.3%	41	27.3%	69		
	3	24	32.0%	31	20.7%	55		
	4	9	12.0%	19	12.7%	28		
	NA	4	5.3%	5	3.3%	9		
Emotional regulation F	0	3	4.0%	7	4.7%	10	4.514	0.341
	1	22	29.3%	50	33.3%	72		
	2	40	53.3%	60	40.0%	100		
	3	10	13.3%	32	21.3%	42		
	N	0	0.0%	1	0.7%	1		
Emotional regulation E	0	3	4.0%	8	5.3%	11	0.869	0.972
	1	15	20.0%	30	20.0%	45		
	2	21	28.0%	42	28.0%	63		
	3	21	28.0%	35	23.3%	56		
	4	12	16.0%	28	18.7%	40		
	NA	3	4.0%	7	4.7%	10		
Wishful Thinking F	0	9	12.0%	10	6.7%	19	5.405	0.248
	1	21	28.0%	35	23.3%	56		
	2	37	49.3%	74	49.3%	111		
	3	8	10.7%	29	19.3%	37		
	4	0	0.0%	2	1.3%	2		
Wishful Thinking E	0	11	14.7%	11	7.3%	22	13.506	0.019
	1	15	20.0%	37	24.7%	52		
	2	23	30.7%	35	23.3%	58		
	3	13	17.3%	26	17.3%	39		
	4	4	5.3%	31	20.7%	35		
	NA	9	12.0%	10	6.7%	19		
Social support F	0	4	5.3%	24	16.0%	28	6.788	0.079
	1	37	49.3%	77	51.3%	114		
	2	13	17.3%	19	12.7%	32		
	3	21	28.0%	30	20.0%	51		

Social support E	0	1	1.3%	8	5.3%	9	8.614	0.125
	1	11	14.7%	28	18.7%	39		
	2	29	38.7%	47	31.3%	76		
	3	13	17.3%	21	14.0%	34		
	4	17	22.7%	24	16.0%	41		
	NA	4	5.3%	22	14.7%	26		
Resignation F	0	16	21.3%	40	26.7%	56	4.901	0.298
	1	35	46.7%	50	33.3%	85		
	2	13	17.3%	27	18.0%	40		
	3	10	13.3%	32	21.3%	42		
	4	1	1.3%	1	0.7%	2		
Resignation E	0	8	10.7%	11	7.3%	19	1.739	0.884
	1	19	25.3%	42	28.0%	61		
	2	13	17.3%	22	14.7%	35		
	3	11	14.7%	19	12.7%	30		
	4	8	10.7%	16	10.7%	24		
	NA	16	21.3%	40	26.7%	56		
Total		75	100.0%	150	100.0%	225		

Figure 12: Comparative distribution of coping strategies in children with transfusion-dependent TM and control group

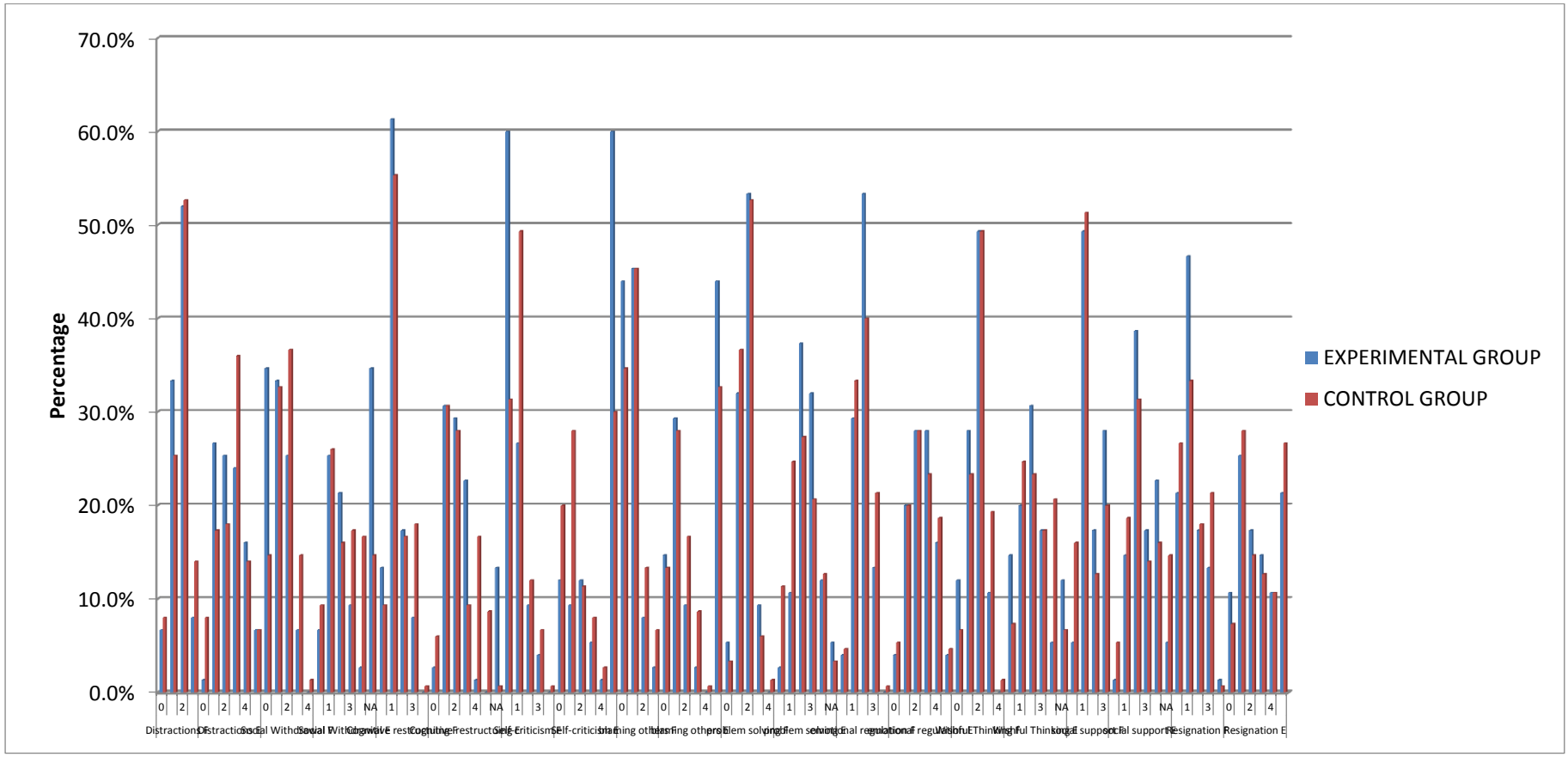


Table 13: Mean difference in children with transfusion-dependent TM and control group in terms of level of emotional awareness

	EXPERIMENTAL GROUP		CONTROL GROUP		Z	p-value
	Mean	SD	Mean	SD		
Differentiating emotions	4.91	2.81	6.01	3.17	-2.300	0.021
Verbal Sharing of Emotions	2.23	1.43	2.89	1.39	-3.226	0.001
Acting out	3.89	2.66	5.16	2.58	-3.364	0.001
Bodily Awareness	3.43	2.01	4.23	2.20	-2.701	0.007
Attending to Others	4.55	1.85	5.06	1.72	-2.068	0.039
Analysis of emotions	5.25	2.53	5.67	2.38	-1.256	0.209

Figure13: Mean difference in children with transfusion-dependent TM and control group in terms of level of emotional awareness

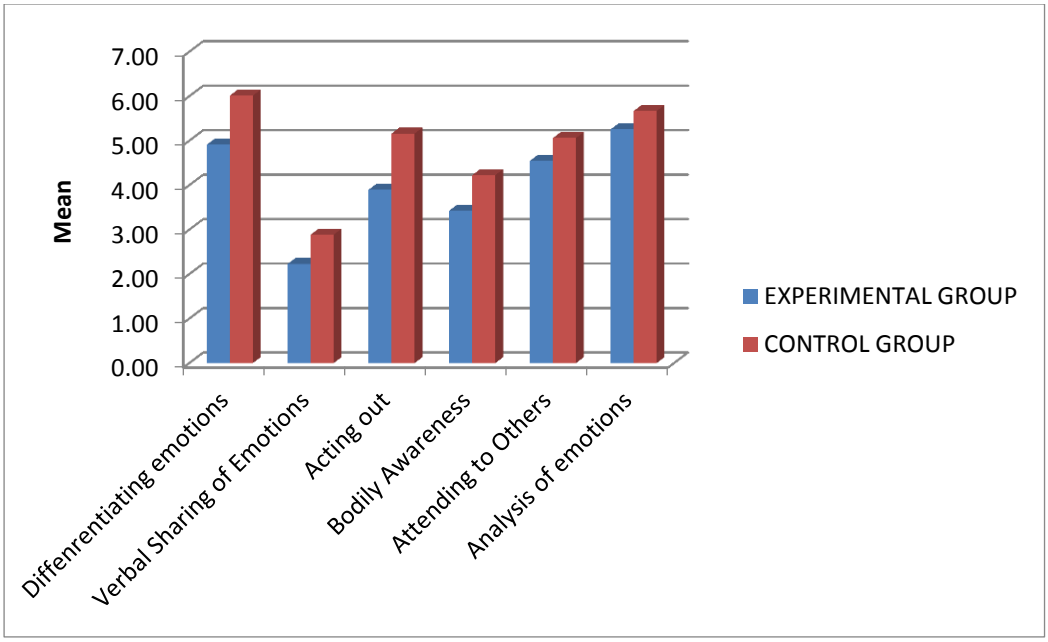


Table 14: Mean difference in children with transfusion-dependent TM and control group in terms of general health

	EXPERIMENTAL GROUP		CONTROL GROUP		Z	p-value
	Mean	SD	Mean	SD		
GHQ-12	11.52	4.79	7.53	5.28	-5.444	0.001

Figure 14: Mean difference in children with transfusion-dependent TM and control group in terms of general health

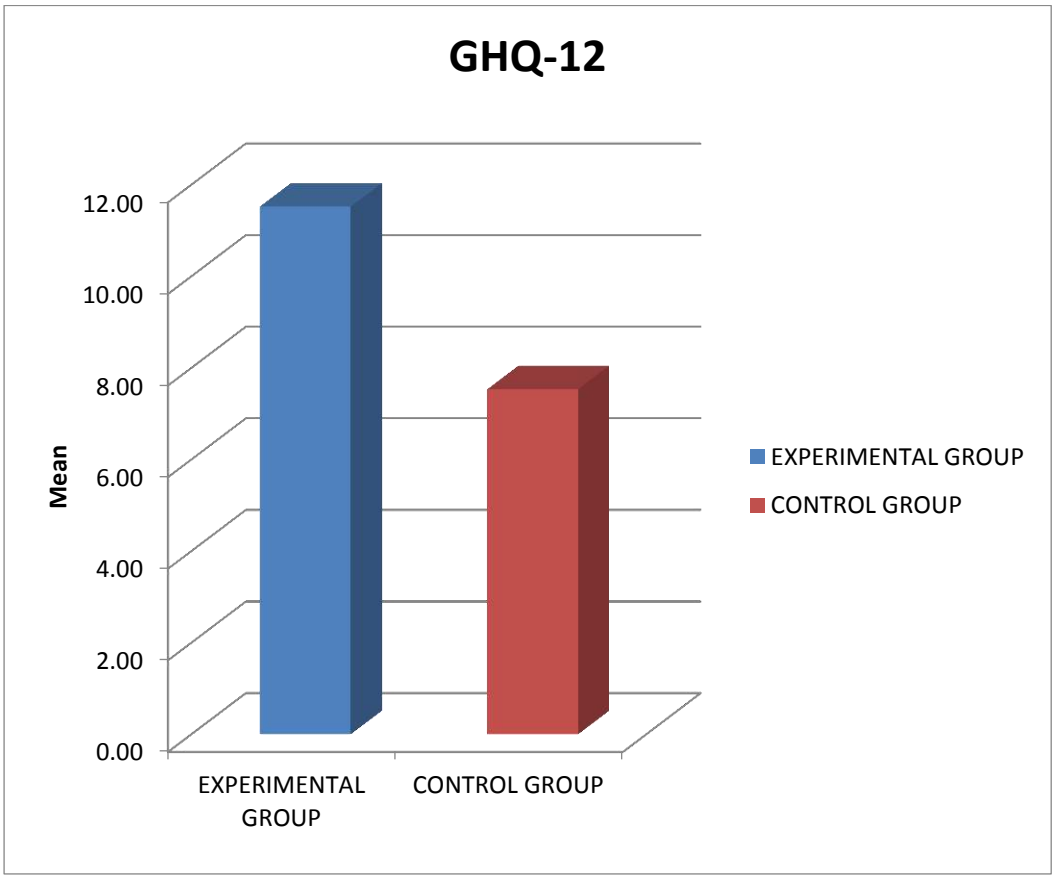


Table 15: Mean difference in children with transfusion-dependent TM and control group in terms of behavioural issues

	EXPERIMENTAL GROUP		CONTROL GROUP		Z	p-value
	Mean	SD	Mean	SD		
Pediatric Symtoms Checklist	.	.	.	.		
Internalizing	1.59	1.41	1.23	1.21	1.953	**0.052**
Attention	2.40	1.92	2.84	2.25	-1.253	0.210
Externalizing	2.33	2.00	2.26	2.44	-0.960	0.337
Total	6.32	4.05	6.33	4.64	-0.021	0.983

Figure 15: Mean difference in children with transfusion-dependent TM and control group in terms of behavioural issues

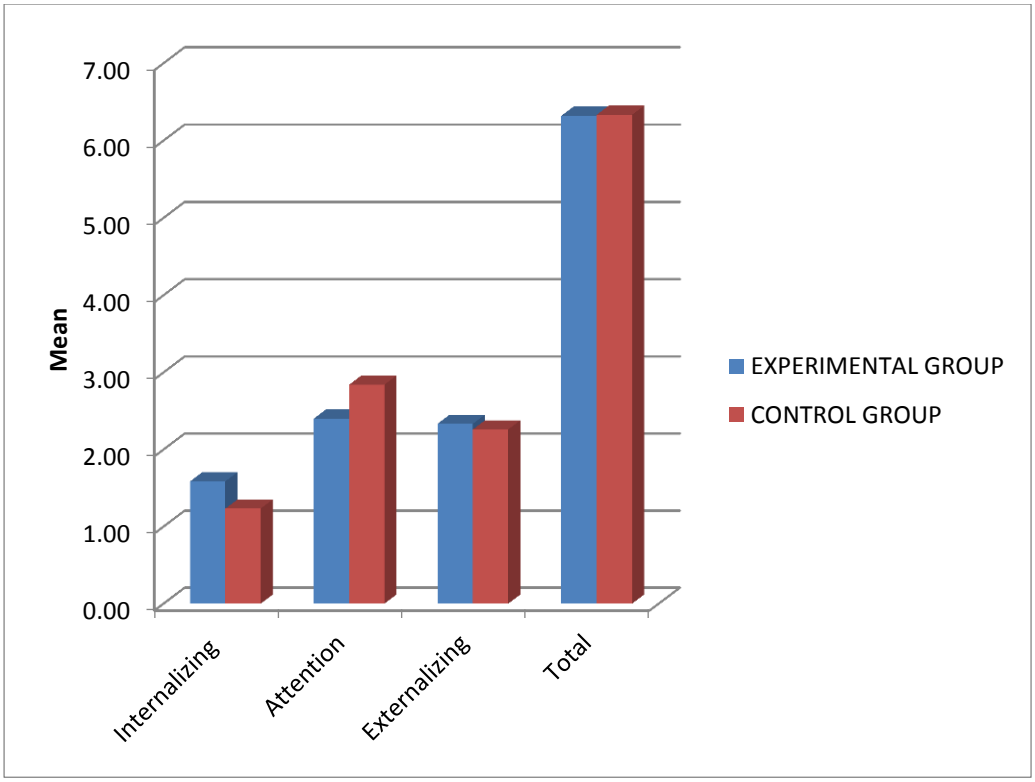


Table 16: Mean difference between children with transfusion-dependent TM and control group in terms of family functioning

	EXPERIMENTAL GROUP		CONTROL GROUP		Z	p-value
	Mean	SD	Mean	SD		
PEADSQL Family Impact Module-Past 1 Month	.	.	.	.		
Physical Function	387.80	120.19	489.50	104.96	-5.975	0.001
Emotional Function	306.76	125.82	400.17	94.23	-5.353	0.001
Social Function	275.00	118.91	352.83	61.00	-5.172	0.001
Cognitive Function	369.60	129.58	443.83	80.73	-4.639	0.001
Communication	204.67	90.58	270.00	55.34	-6.215	0.001
Worry	250.55	128.68	462.17	59.13	-11.278	0.001
FAMILY FUNCTIONING: Daily Activity	195.44	89.50	271.50	46.53	-7.802	0.001
FAMILY FUNCTIONING: Family Relationships	369.00	125.53	445.83	77.20	-5.431	0.001
TOTAL SCORES	65.52	20.02	87.11	11.84	-8.670	0.001
PARENTS HRQL SUMMARY	117.94	36.04	156.79	21.31	-8.670	0.001
FAMILY FUNCTIONING SUMMARY SCORES	294.85	90.11	391.98	53.28	-8.670	0.001

Figure 16: Mean difference between children with transfusion-dependent TM and control group in terms of family functioning

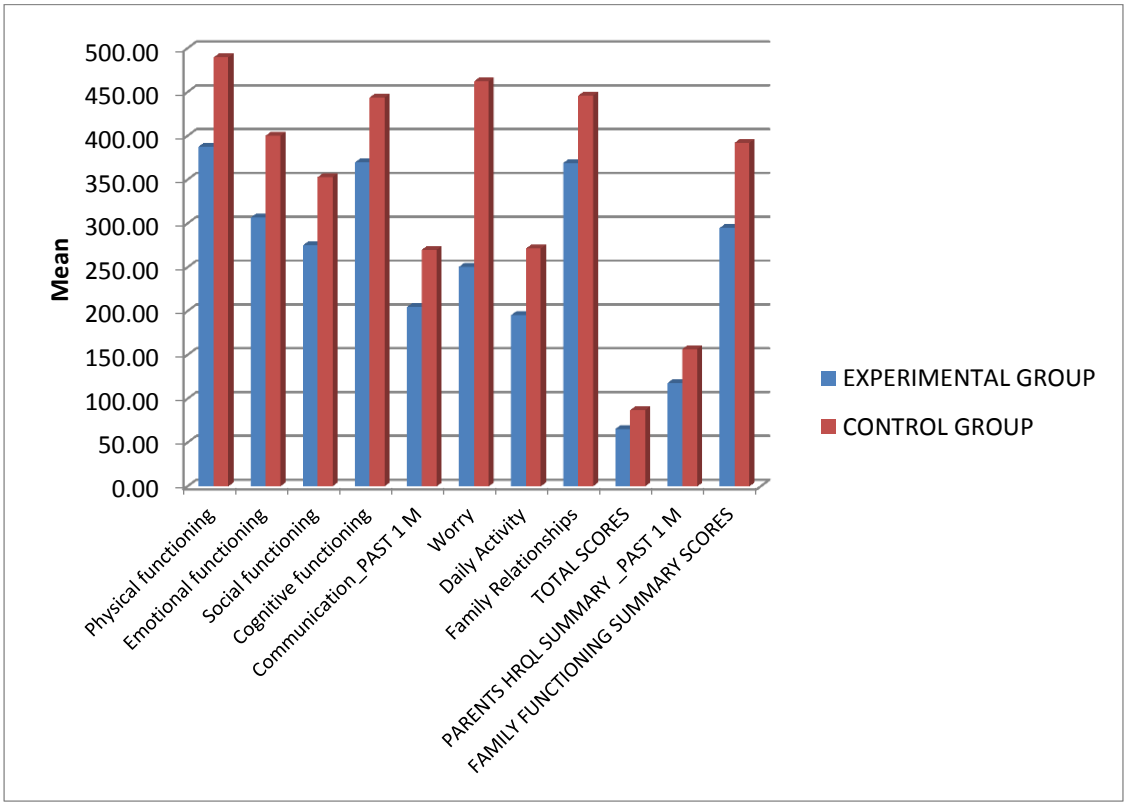


Table 17: Mean difference between children with transfusion-dependent TM and control group in terms of level of depression

	EXPERIMENTAL GROUP		CONTROL GROUP		Z	p-value
	Mean	SD	Mean	SD		
CDI	47.65	12.56	43.26	10.35	2.790	0.006

Figure 17: Mean difference between children with transfusion-dependent TM and control group in terms of level of depression

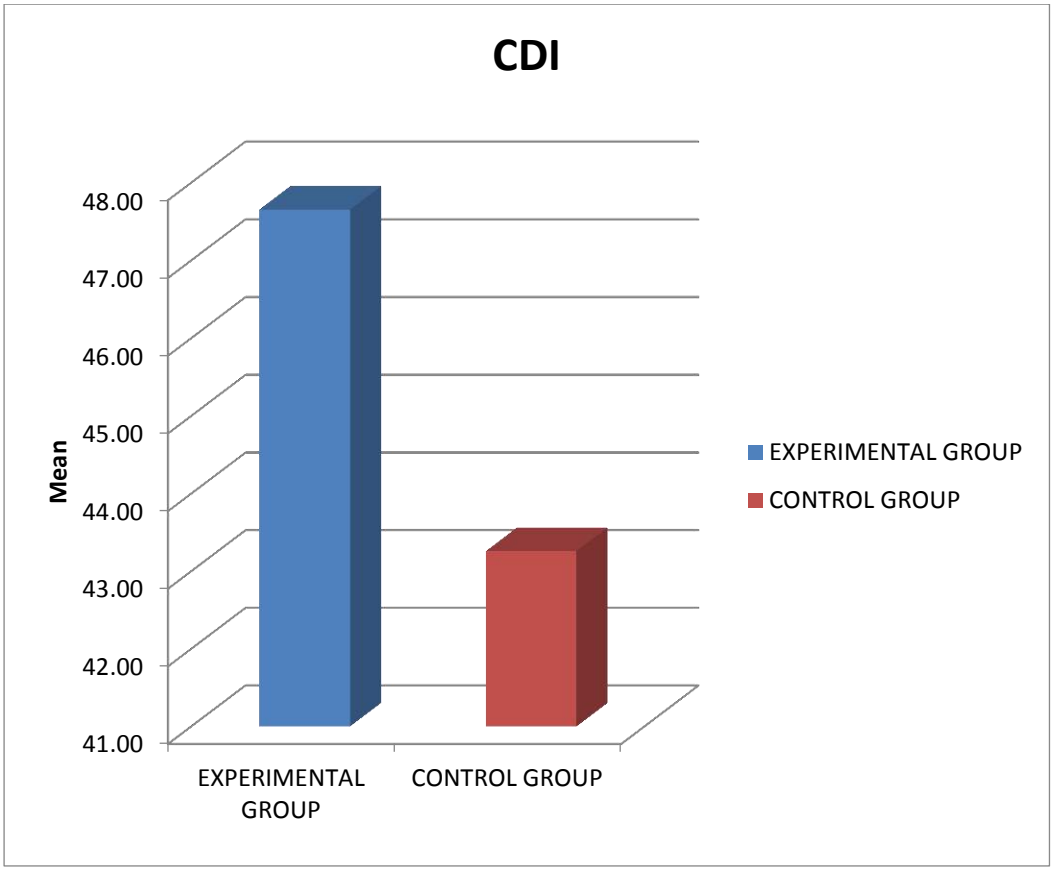


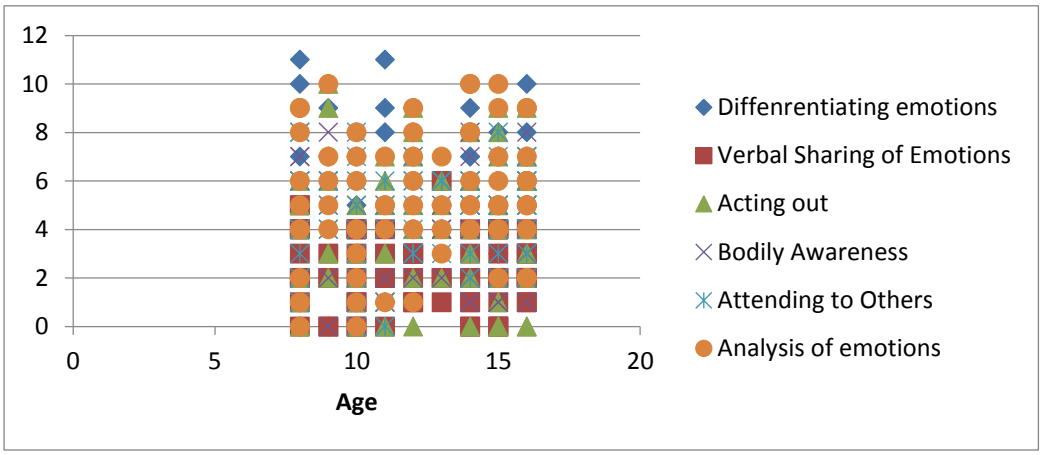
Table 18: Relationship between age, time since diagnosis, mean pre-transfusion Hb, average requirement of transfusion, cost of treatment per month, time spent in the hospital per month, cost of travel per month, and number of missed school days with level of emotional awareness, general health, and behavior issues

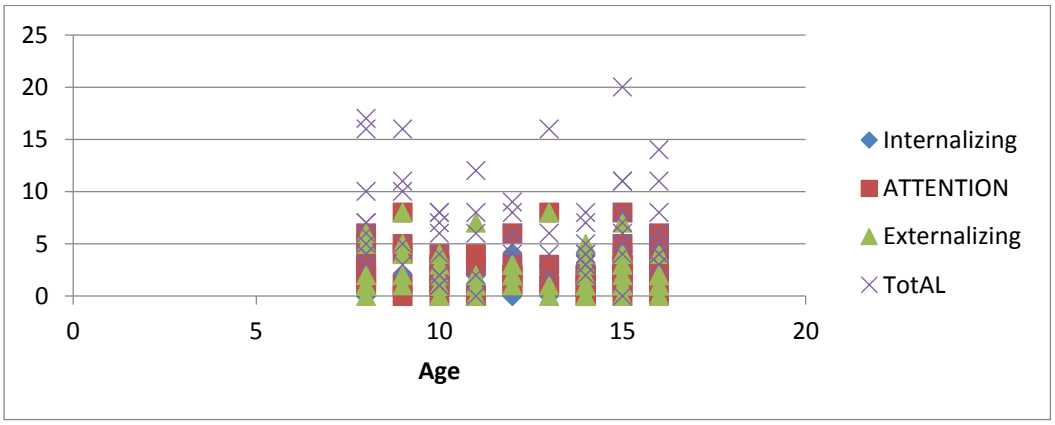
Spearman's rho		Diffenrentiating emotions	Verbal Sharing of Emotions	Acting out	Bodily Awareness	Attending to Others	Analysis of emotions	GHQ-12	Internalizing	Attention	Externalizing	TOTAL
Age	Correlation Coefficient	-0.023	-0.055	0.166	-0.007	0.081	0.146	-0.113	0.051	-0.053	-0.031	-0.025
	p-value	0.842	0.641	0.154	0.953	0.489	0.212	0.333	0.667	0.651	0.790	0.831
	N	75	75	75	75	75	75	75	75	75	75	75
Time since Diagnosis	Correlation Coefficient	-0.015	-0.046	0.117	0.070	0.101	0.116	-0.039	0.061	0.078	0.038	0.054
	p-value	0.898	0.702	0.327	0.561	0.398	0.333	0.742	0.602	0.514	0.750	0.643
	N	75	75	75	75	75	75	75	75	75	75	75
Mean pre-transfusion HB	Correlation Coefficient	0.129	0.127	-0.017	0.013	0.047	0.156	0.130	-0.261	-0.050	-0.043	-0.136
	p-value	0.271	0.276	0.885	0.913	0.689	0.182	0.268	0.024	0.672	0.715	0.244
	N	75	75	75	75	75	75	75	75	75	75	75
Average Requirement HB	Correlation Coefficient	-0.010	0.247	0.051	0.171	-0.006	-0.206	0.010	-0.123	0.036	0.068	0.022
	p-value	0.931	0.033	0.662	0.142	0.961	0.077	0.933	0.294	0.762	0.561	0.850
	N	75	75	75	75	75	75	75	75	75	75	75

Cost of treatment	Correlation Coefficient	0.103	-0.065	0.030	0.066	0.286	0.199	0.057	0.184	0.069	0.206	0.183
	p-value	0.377	0.579	0.800	0.575	0.013	0.088	0.627	0.114	0.558	0.077	0.116
	N	75	75	75	75	75	75	75	75	75	75	75
Time Spent in Hospital	Correlation Coefficient	0.098	0.110	0.315	0.046	0.149	0.153	-0.142	-0.035	0.058	0.045	0.040
	p-value	0.401	0.349	0.006	0.697	0.201	0.189	0.223	0.764	0.621	0.703	0.732
	N	75	75	75	75	75	75	75	75	75	75	75
Cost of Travel	Correlation Coefficient	0.266	-0.093	-0.023	0.014	0.078	0.159	0.057	-0.033	-0.136	-0.122	-0.180
	p-value	0.022	0.433	0.845	0.908	0.510	0.177	0.632	0.778	0.247	0.300	0.124
	N	74	74	74	74	74	74	74	74	74	74	74
Missed School days	Correlation Coefficient	0.069	0.110	0.243	-0.013	0.057	0.009	-0.196	0.052	0.008	0.081	0.057
	p-value	0.558	0.347	0.035	0.910	0.630	0.938	0.092	0.656	0.947	0.491	0.629
	N	75	75	75	75	75	75	75	75	75	75	75

Figure 18: Relationship between age, time since diagnosis, mean pre-transfusion Hb, average requirement of transfusion, cost of treatment per month, cost of travel per month, time spent in the hospital per month, and number of missed school days with level of emotional awareness, general health, and behavior issues

Figure 18.0: Relationship between age with level of emotional awareness, behavioural issues, and general health





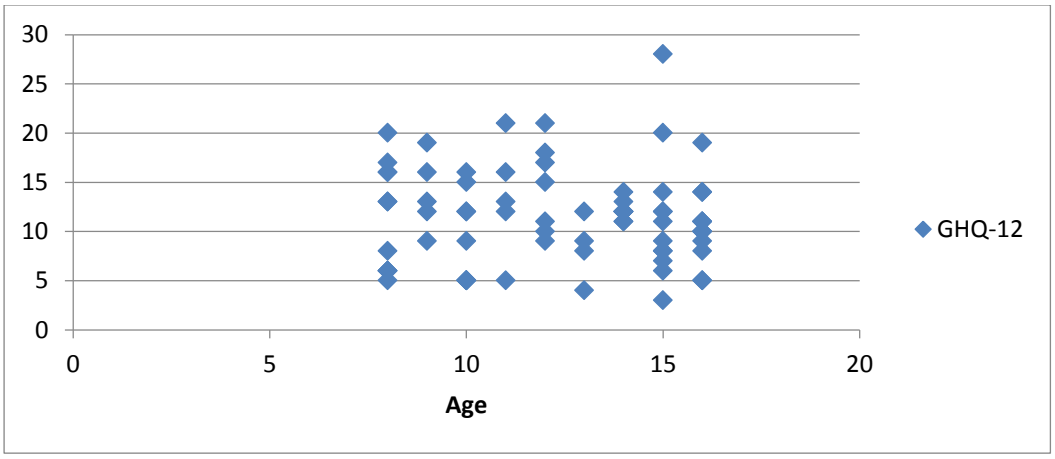


Figure 18.1: Relationship between time since diagnosis with level of emotional awareness and behavioural issues

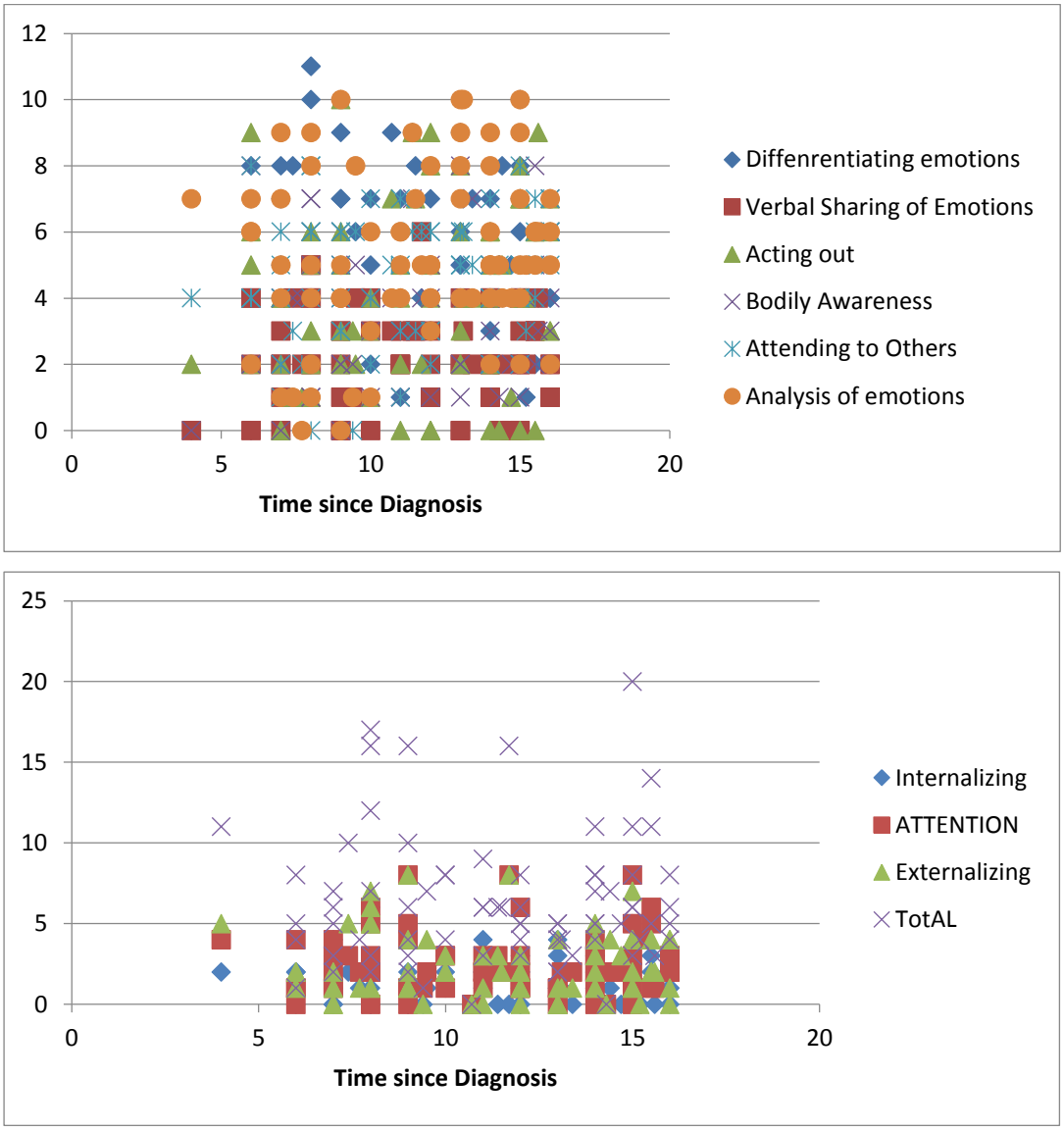
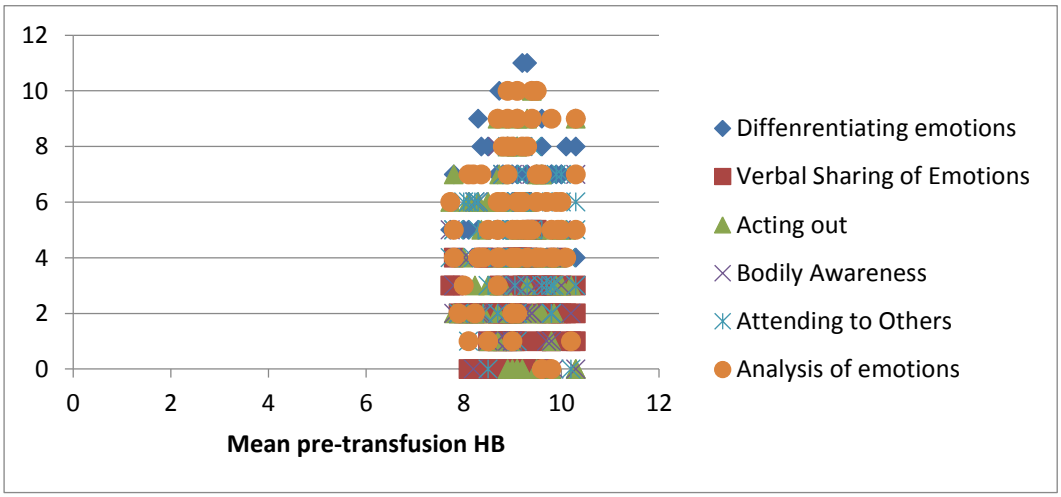
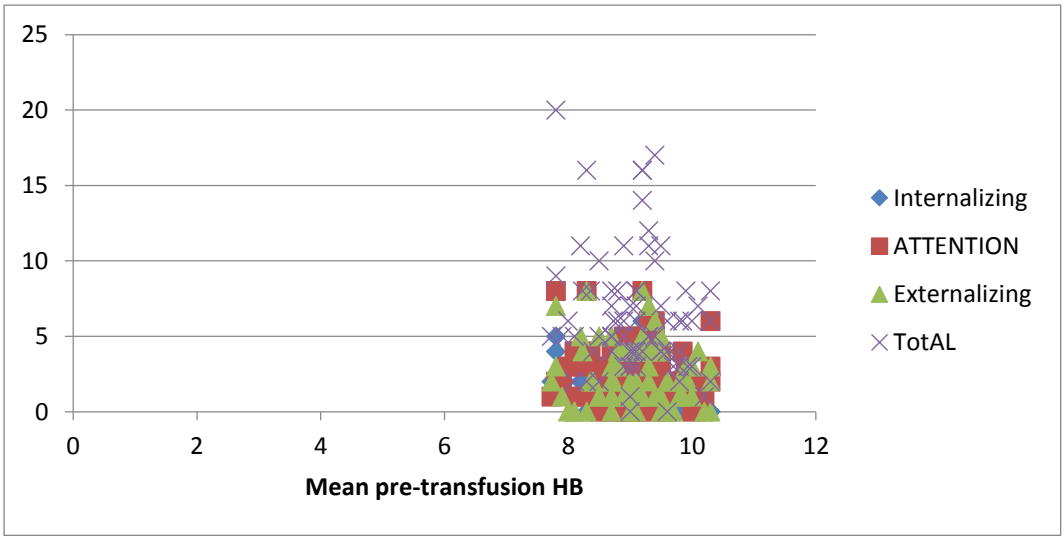


Figure 18.2: Relationship between mean pre-transfusion Hb with level of emotional awareness, behavioural issues and general health





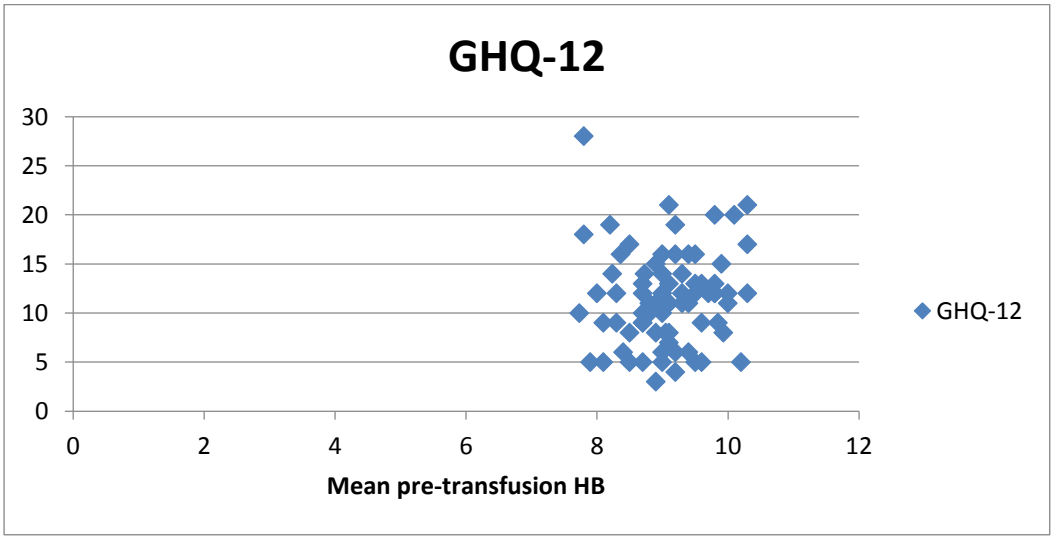
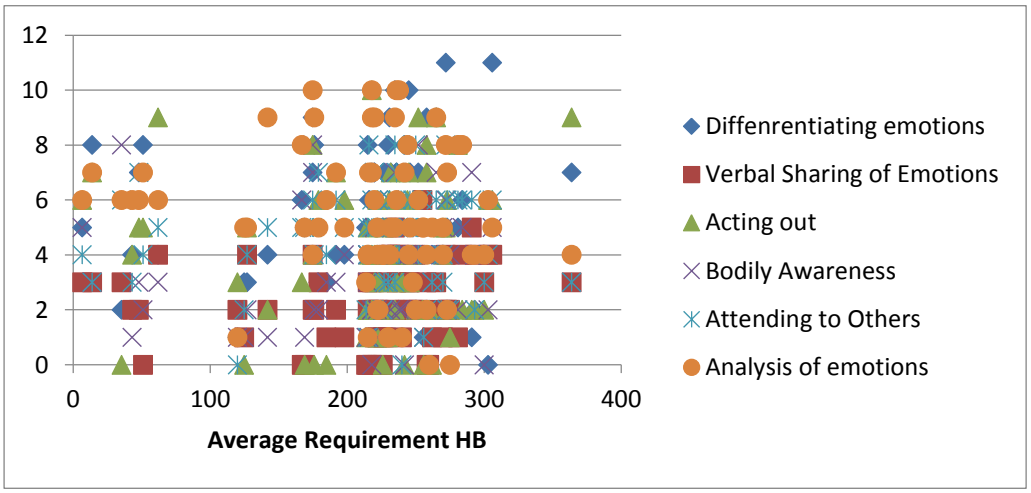
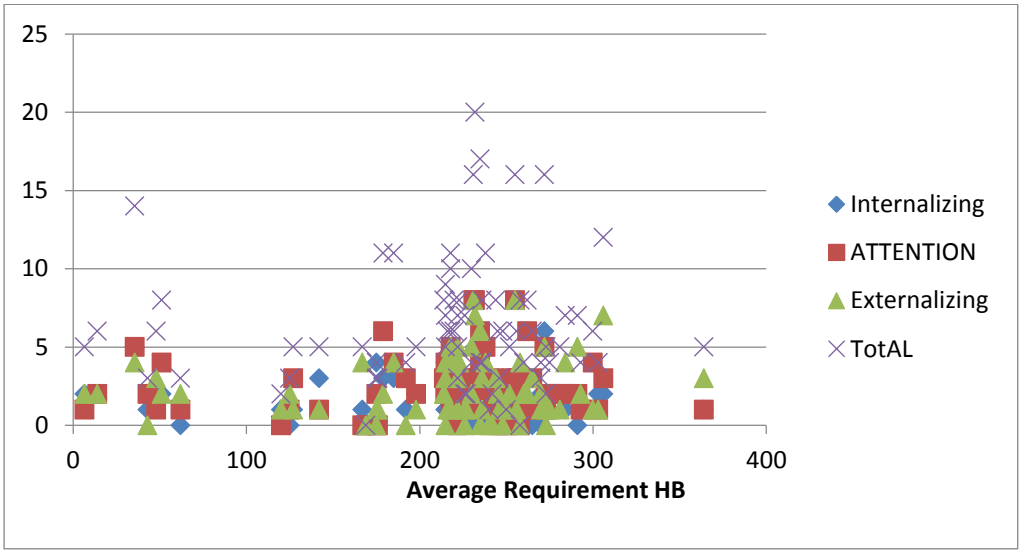


Figure 18.3: Relationship between average requirement of transfusion with level of emotional awareness, behavioural issues, and general health





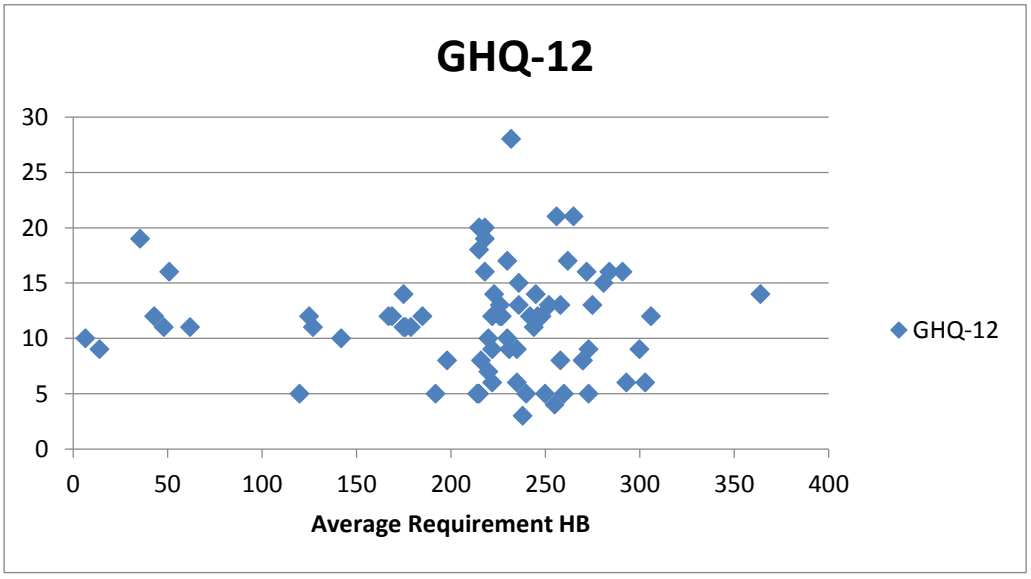
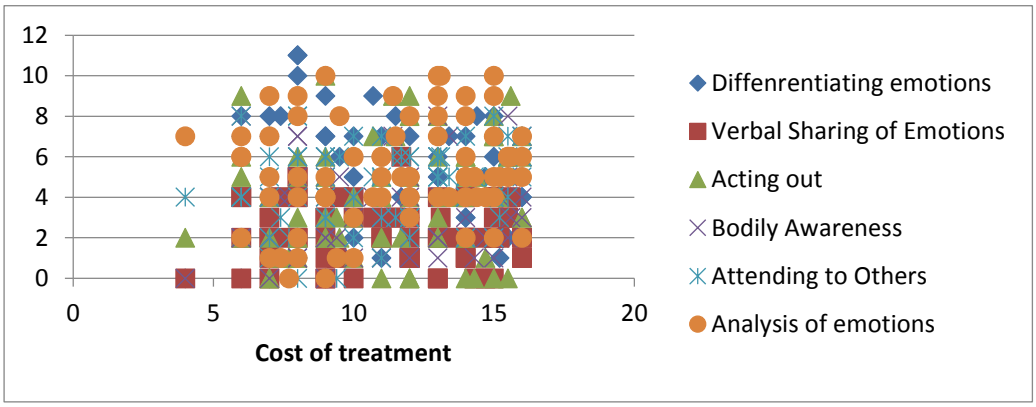
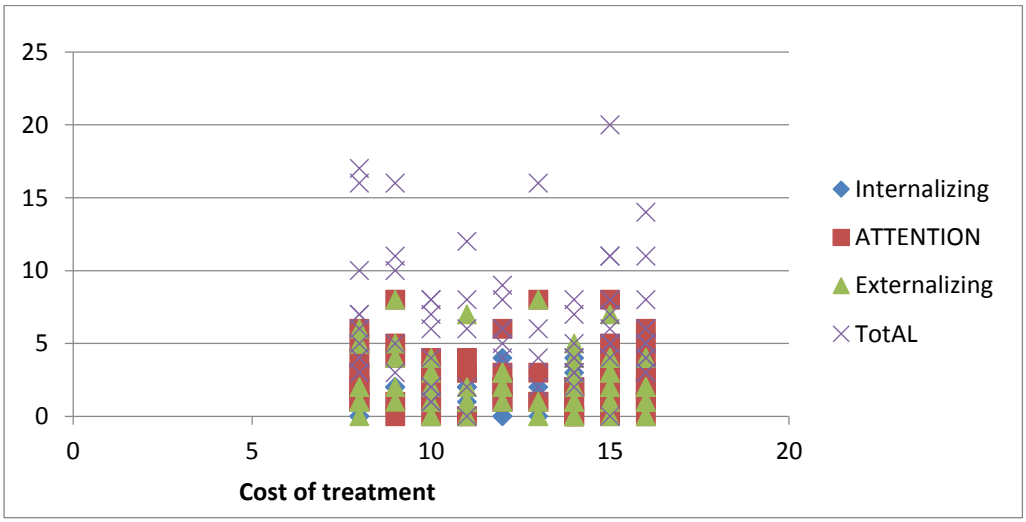


Figure 18.4: Relationship between the cost of treatment with a level of emotional awareness, behavioural issues, and general health





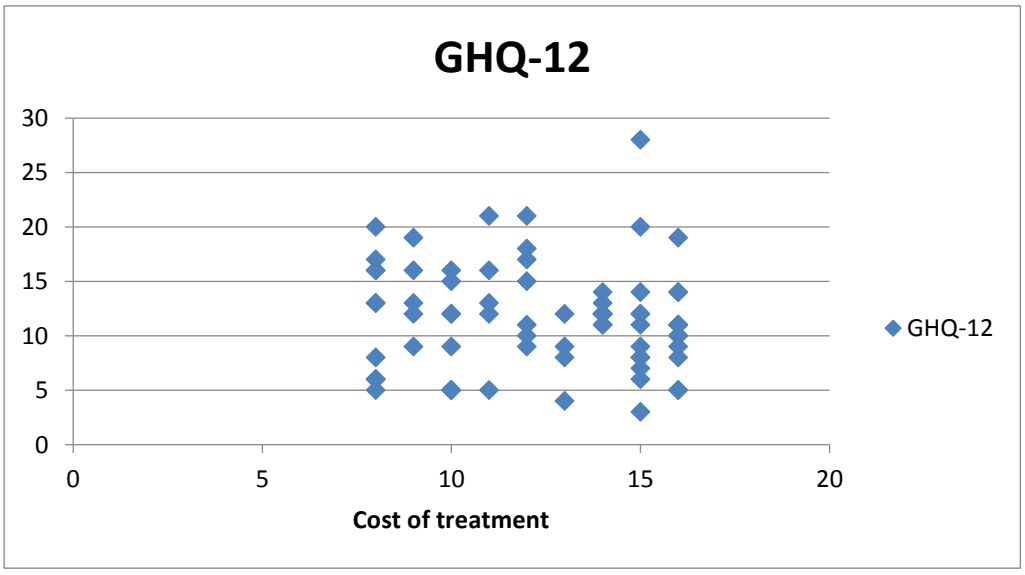
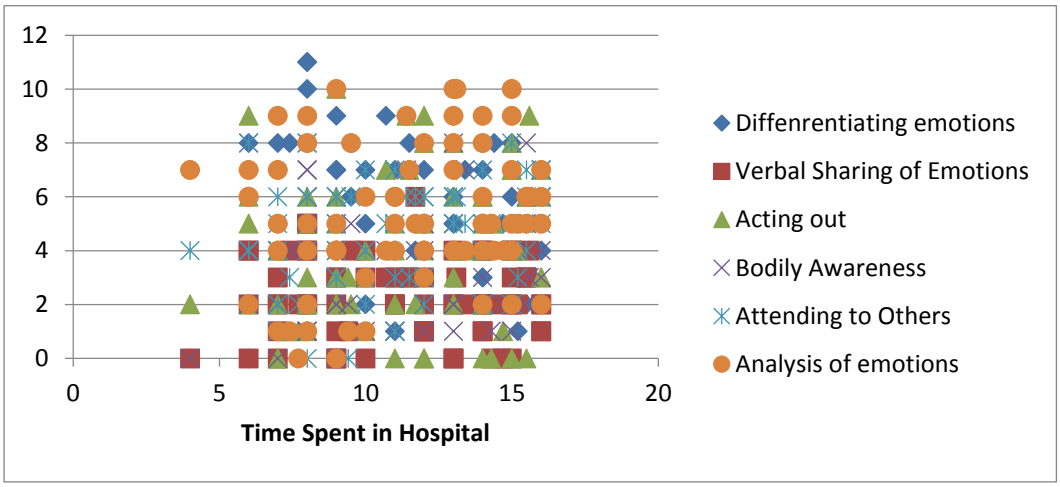
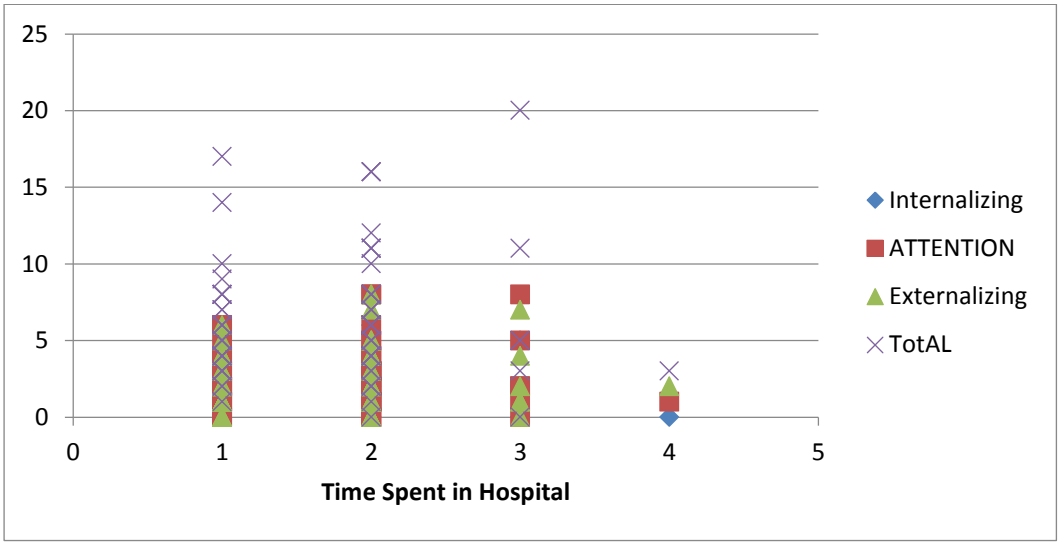


Figure 18.5: Relationship between time spent in hospital with level of emotional awareness, behavioural issues and general health





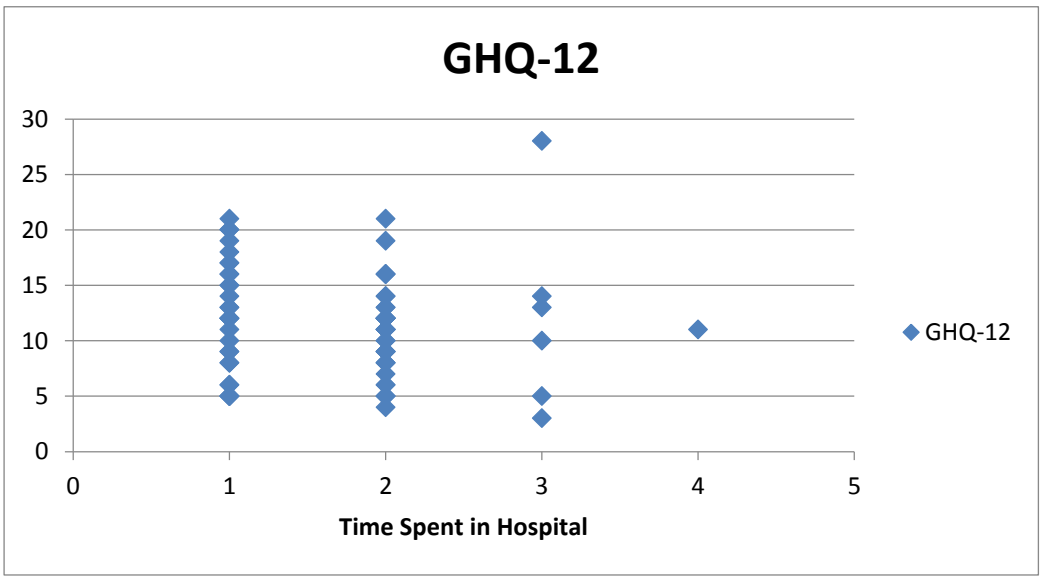
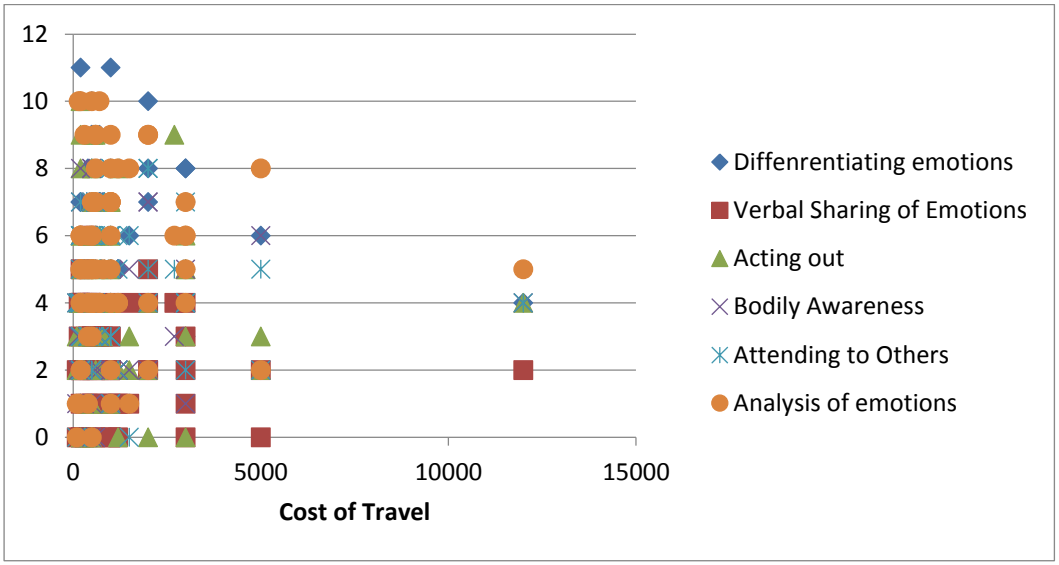
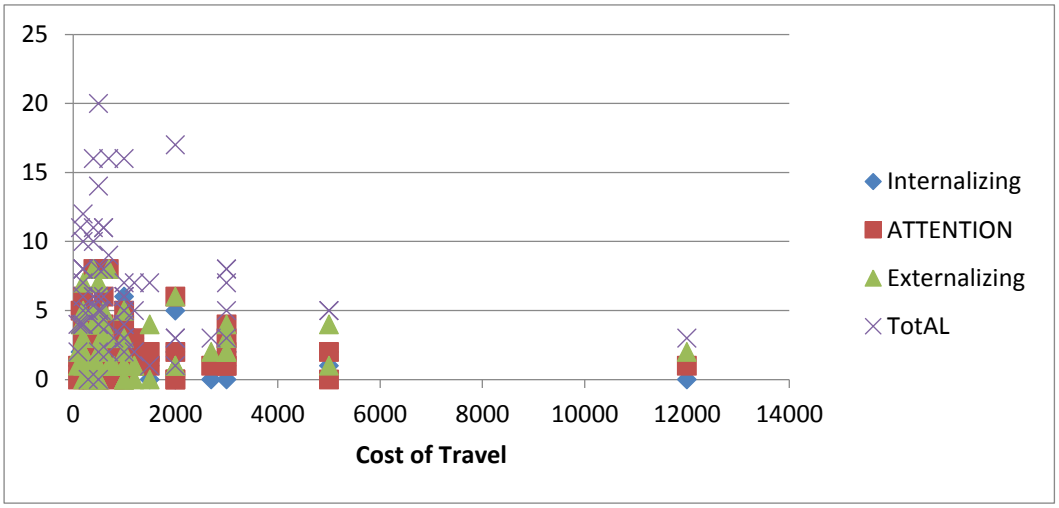


Figure 18.6: Relationship between cost of travel with level of emotional awareness, behavioural issues and general health





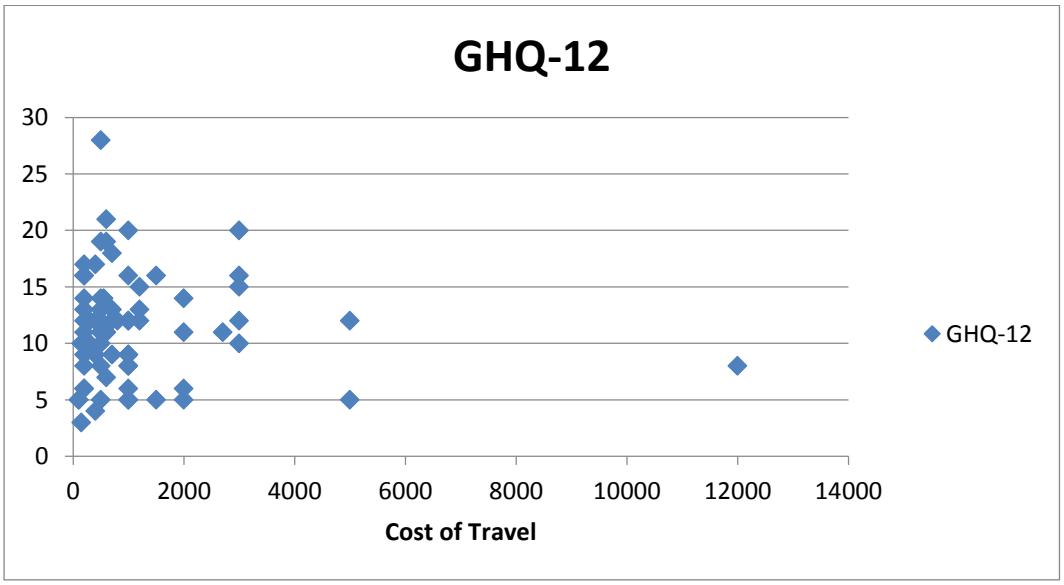
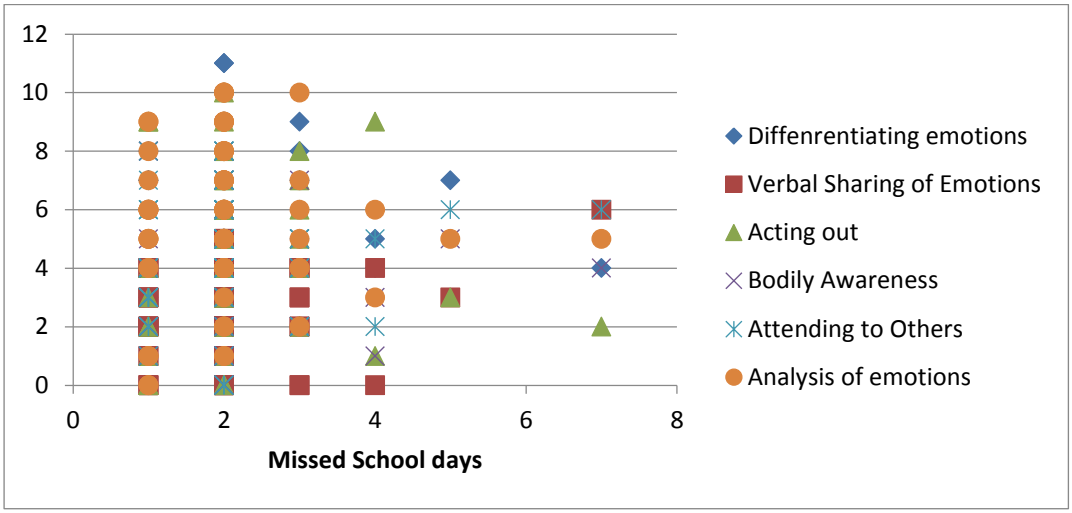
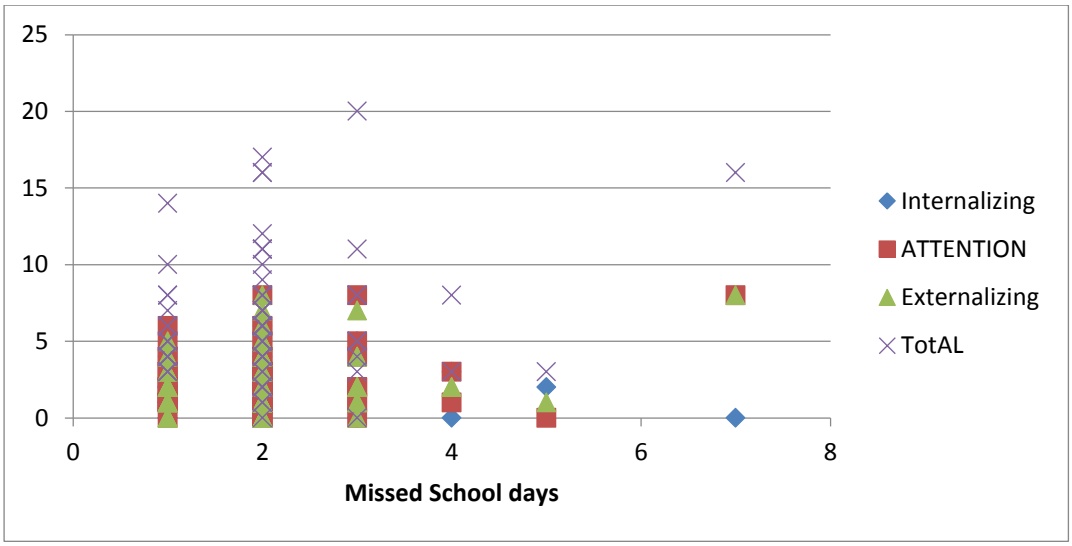


Figure 18.7: Relationship between missed school days with level of emotional awareness, behavioural issues and general health





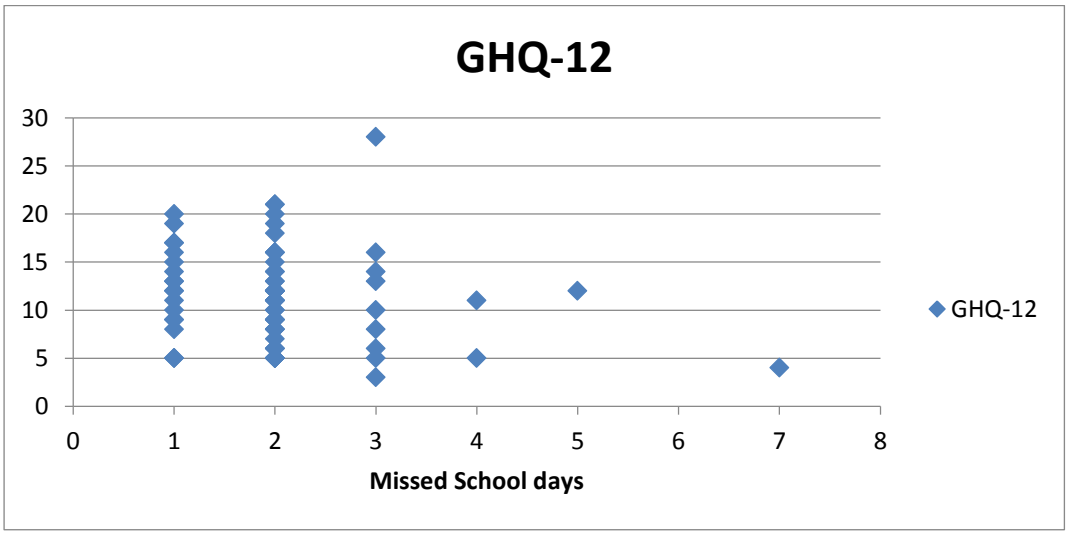
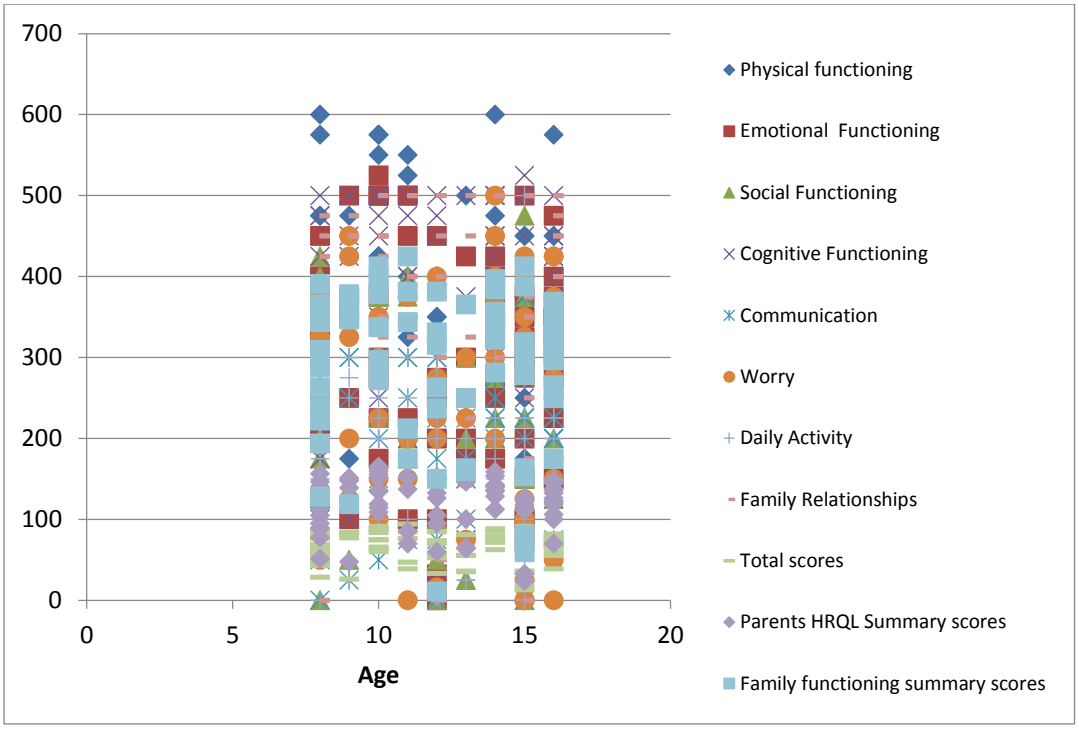


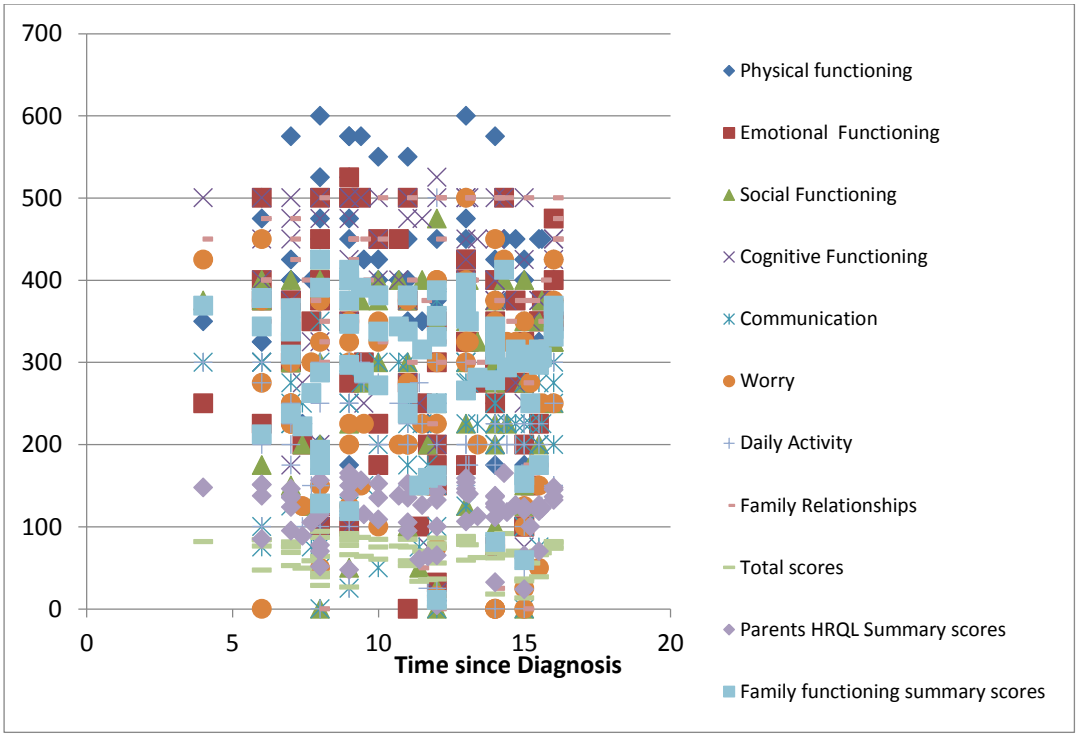
Table 19: Relation between age, time since diagnosis. mean pre-transfusion Hb, average requirement of transfusion, cost of treatment, time spent in hospital, cost of travel, and missed school days with family functioning

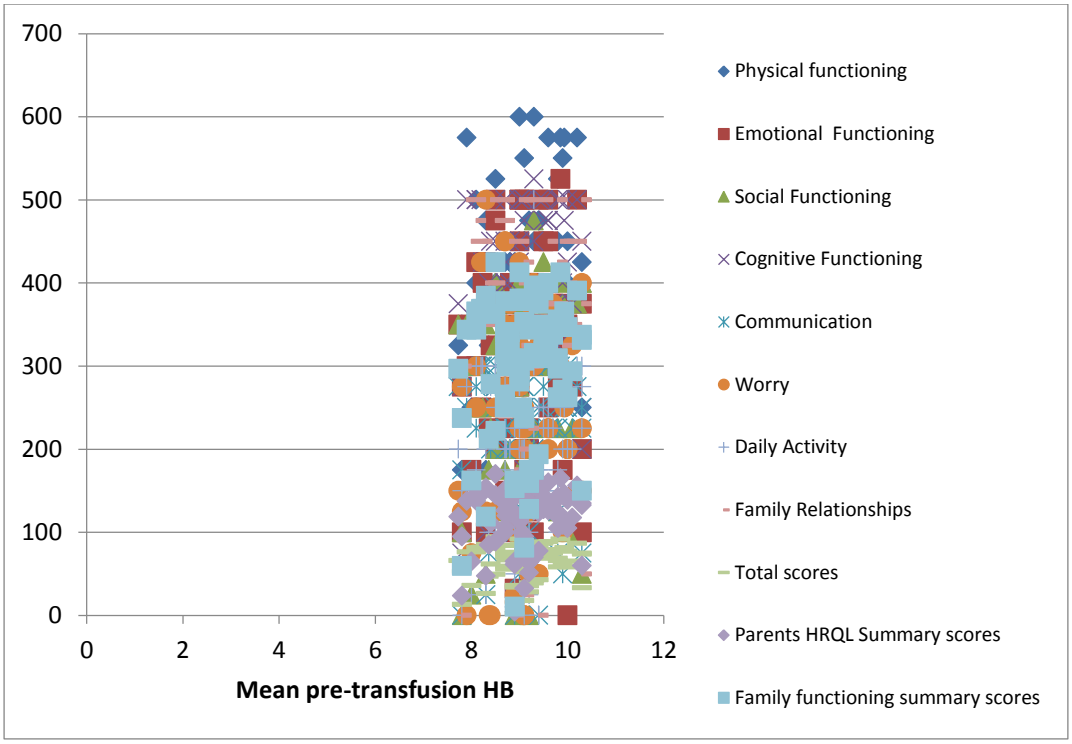
Spearman's rho		Physical	Emotional	Social	Cognitive	Communication	Worry	Daily Activity	Family Relationships	TOTAL SCORES	PARENTS HRQL SUMMARY	FAMILY FUNCTIONING SUMMARY SCORES
Age	Correlation Coefficient	-0.191	-0.112	-0.043	-0.069	0.042	0.056	-0.103	-0.035	-0.077	-0.077	-0.077
	p-value	0.100	0.337	0.715	0.554	0.720	0.633	0.378	0.766	0.513	0.513	0.513
	N	75	75	75	75	75	75	75	75	75	75	75
Time since Diagnosis	Correlation Coefficient	-0.201	-0.120	-0.122	-0.136	-0.009	-0.012	-0.165	-0.020	-0.128	-0.128	-0.128
	p-value	0.090	0.315	0.308	0.254	0.943	0.917	0.167	0.868	0.285	0.285	0.285
	N	75	75	75	75	75	75	75	75	75	75	75
Mean pre-transfusion HB	Correlation Coefficient	0.281	0.090	0.270	0.058	0.056	0.029	0.169	-0.082	0.119	0.119	0.119
	p-value	0.015	0.444	0.019	0.621	0.635	0.807	0.147	0.482	0.308	0.308	0.308
	N	75	75	75	75	75	75	75	75	75	75	75
Average Requirement HB	Correlation Coefficient	-0.011	-0.009	0.063	-0.060	-0.058	-0.181	0.144	-0.032	0.012	0.012	0.012
	p-value	0.926	0.936	0.592	0.612	0.620	0.121	0.216	0.783	0.918	0.918	0.918
	N	75	75	75	75	75	75	75	75	75	75	75

Cost of treatment	Correlation Coefficient	-0.028	-0.110	-0.290	-0.088	-0.161	-0.239	-0.226	-0.268	-0.206	-0.206	-0.206
	p-value	0.810	0.349	0.012	0.453	0.167	0.039	0.051	0.020	0.076	0.076	0.076
	N	75	75	75	75	75	75	75	75	75	75	75
Time Spent in Hospital	Correlation Coefficient	-0.085	-0.043	-0.033	-0.001	-0.034	-0.016	-0.090	-0.095	-0.053	-0.053	-0.053
	p-value	0.470	0.715	0.778	0.992	0.770	0.890	0.441	0.420	0.649	0.649	0.649
	N	75	75	75	75	75	75	75	75	75	75	75
Cost of Travel	Correlation Coefficient	0.185	0.004	-0.110	-0.062	-0.196	-0.160	-0.155	-0.089	-0.102	-0.102	-0.102
	p-value	0.114	0.975	0.352	0.600	0.093	0.172	0.188	0.453	0.385	0.385	0.385
	N	74	74	74	74	74	74	74	74	74	74	74
Missed School days	Correlation Coefficient	-0.094	-0.057	-0.027	0.061	-0.066	-0.269	-0.141	-0.007	-0.109	-0.109	-0.109
	p-value	0.422	0.629	0.816	0.603	0.575	0.020	0.228	0.954	0.352	0.352	0.352
	N	75	75	75	75	75	75	75	75	75	75	75

Figure 19: Relation between age, time since diagnosis. mean pre-transfusion of transfusion, average requirement of transfusion, cost of treatment, time spent in hospital, cost of travel, and missed school days with family functioning



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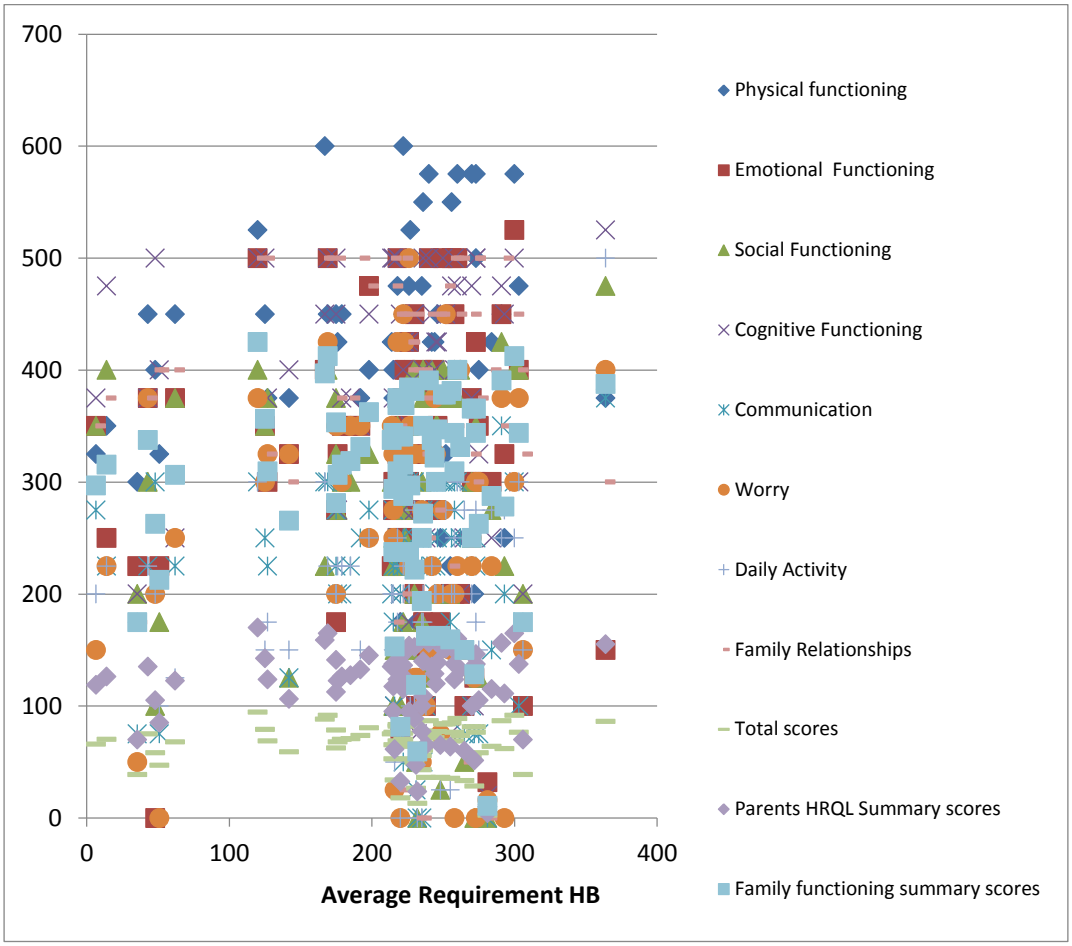
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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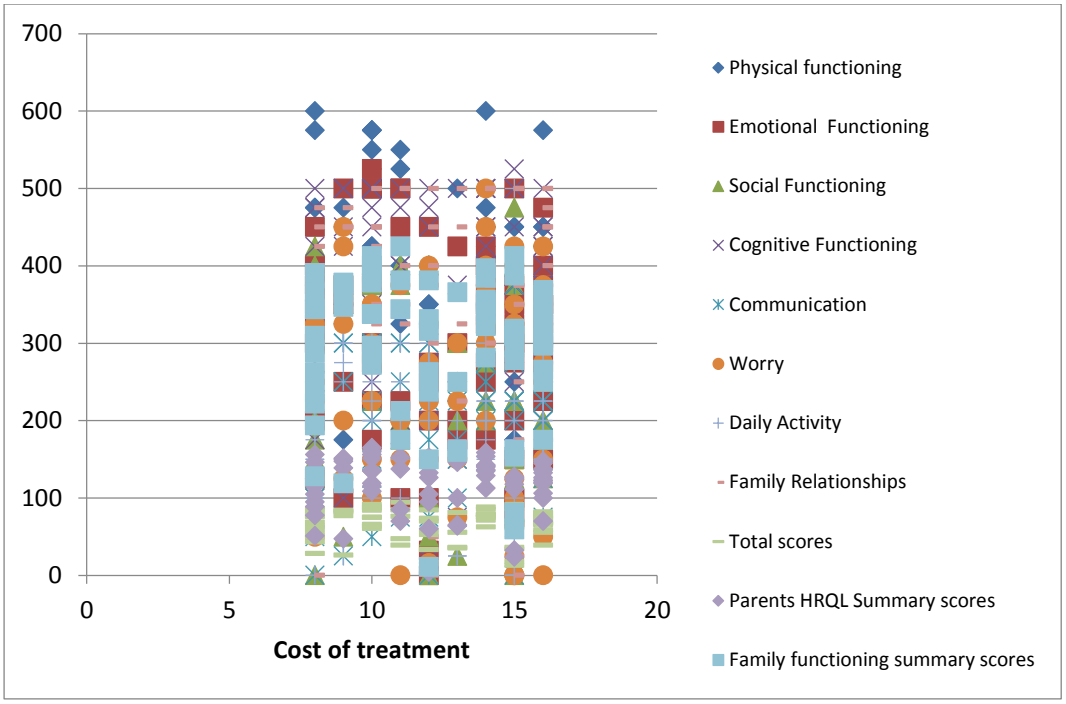
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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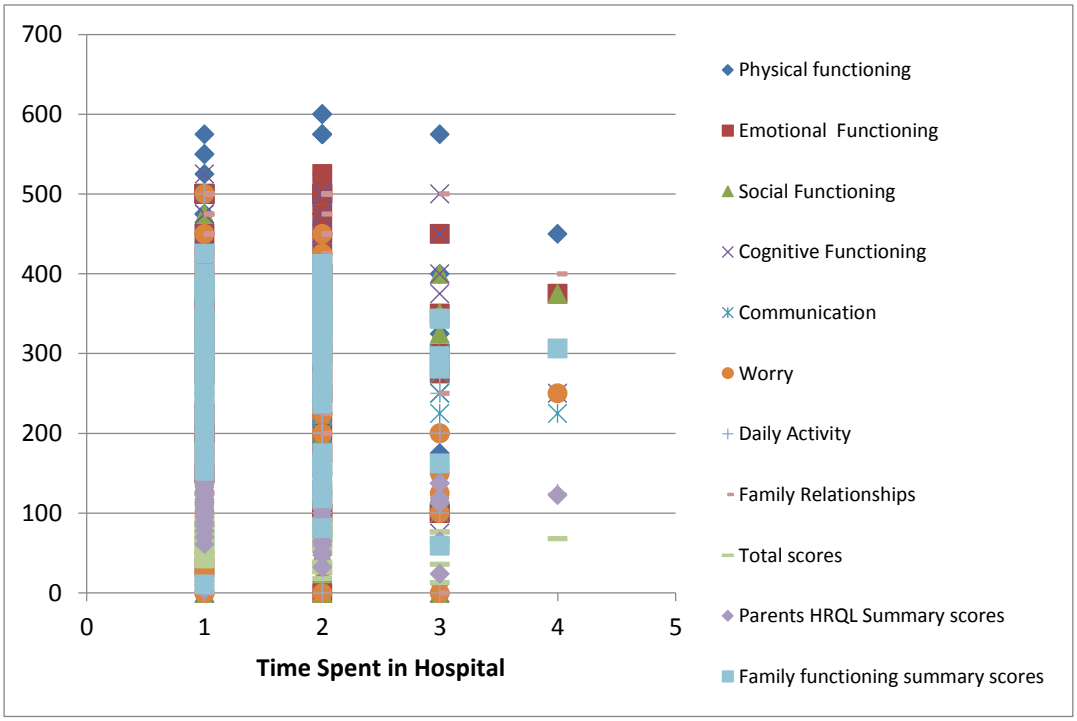
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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Time Spent in Hospital
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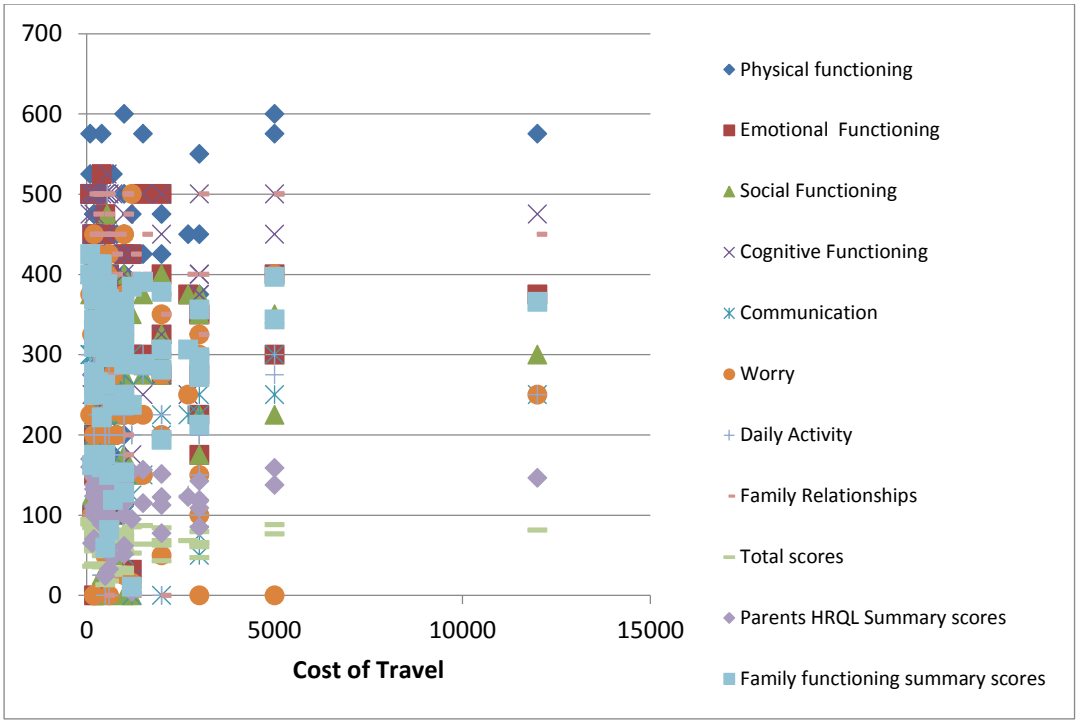
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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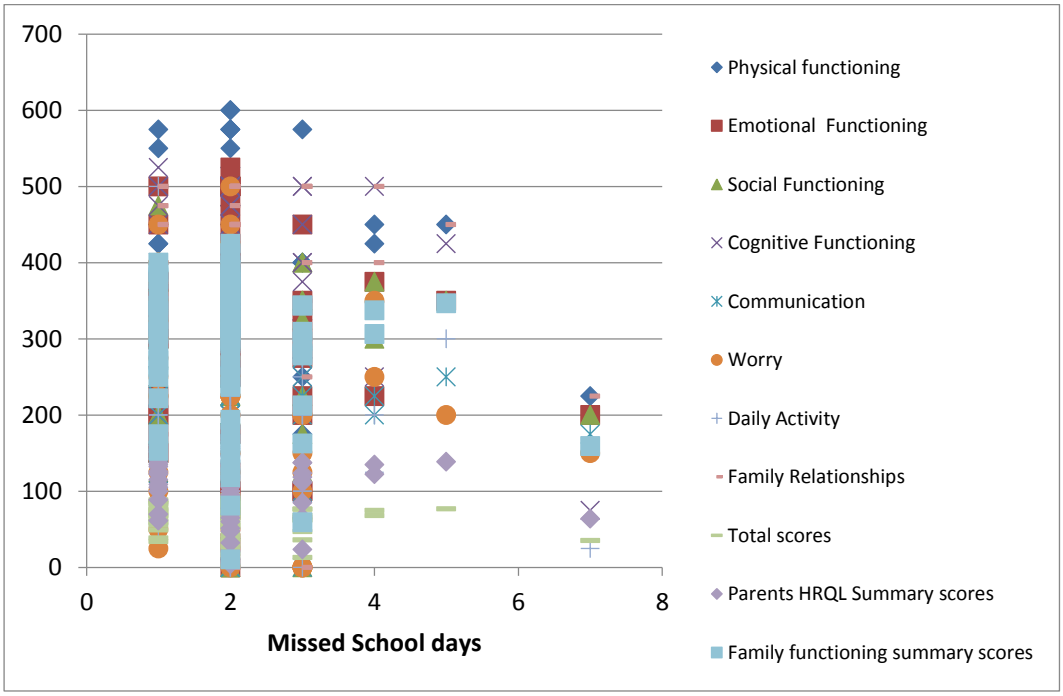
Cost of Travel
Physical functioning
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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Missed School days
Physical functioning
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores

Table 20: Relation between age, time since diagnosis. mean pre-transfusion Hb, average requirement of transfusion, cost of treatment, time spent in hospital, cost of travel, and missed school days with level of depression and coping mechanism

Spearman's rho		CDI	Distraction F	DistractionE	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Baming others E	Problem solving F	Problem solving E
Age	Correlation Coefficient	-0.037	-0.033	0.026	0.131	0.181	0.266	0.399	0.127	0.016	-0.015	0.27	0.196	0.086
	p-value	0.752	0.777	0.832	0.263	0.213	0.021	0.001	0.279	0.932	0.897	0.083	0.091	0.478
	N	75	75	70	75	49	75	65	75	30	75	42	75	71
Time since Diagnosis	Correlation Coefficient	-0.061	-0.105	-0.006	0.146	0.276	0.174	0.413	0.226	-0.064	0.035	0.212	0.172	0.018
	p-value	0.604	0.382	0.965	0.221	0.061	0.143	0.001	0.057	0.742	0.767	0.189	0.148	0.881
	N	75	75	67	75	47	75	63	75	29	75	40	75	69
Mean pre-transfusion HB	Correlation Coefficient	-0.039	-0.029	-0.005	-0.095	-0.143	0.111	-0.087	-0.043	0.217	0.146	0.003	-0.082	-0.008
	p-value	0.737	0.808	0.969	0.417	0.327	0.344	0.493	0.712	0.249	0.21	0.984	0.485	0.946
	N	75	75	70	75	49	75	65	75	30	75	42	75	71
Average Requirement HB	Correlation Coefficient	0.049	-0.033	-0.026	0.12	-0.025	-0.114	-0.138	0.142	0.225	-0.158	-0.139	-0.004	0.03
	p-value	0.673	0.777	0.831	0.306	0.867	0.332	0.273	0.225	0.231	0.175	0.379	0.972	0.807
	N	75	75	70	75	49	75	65	75	30	75	42	75	71

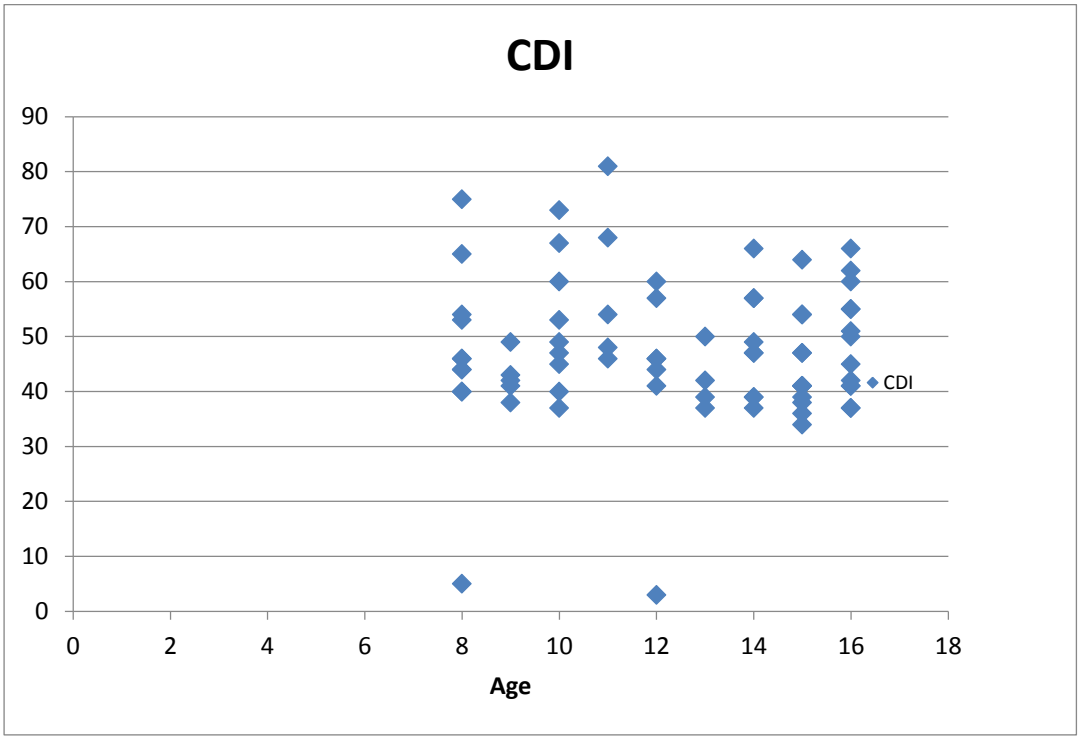
Cost of treatment	Correlation Coefficient	0.073	-0.17	-0.162	-0.011	0.022	-0.08	-0.101	0.109	0.044	0.038	0.236	0.135	0.185
	p-value	0.532	0.144	0.181	0.925	0.881	0.496	0.423	0.354	0.816	0.747	0.133	0.248	0.123
	N	75	75	70	75	49	75	65	75	30	75	42	75	71
Time Spent in Hospital	Correlation Coefficient	0.034	-0.054	-0.246	-0.007	0.049	0.032	-0.059	-0.079	-0.426	0.16	-0.169	0.133	0.111
	p-value	0.774	0.646	0.04	0.955	0.736	0.787	0.643	0.503	0.019	0.17	0.284	0.256	0.359
	N	75	75	70	75	49	75	65	75	30	75	42	75	71
Cost of Travel	Correlation Coefficient	-0.064	-0.029	-0.004	0.069	-0.033	-0.141	-0.122	0.048	-0.075	0.086	0.006	0.082	0.053
	p-value	0.586	0.805	0.974	0.557	0.821	0.232	0.332	0.687	0.698	0.465	0.969	0.487	0.662
	N	74	74	69	74	48	74	65	74	29	74	41	74	70
Missed School days	Correlation Coefficient	0.138	0.045	-0.201	0.123	0.077	0.039	-0.112	-0.065	-0.332	-0.072	-0.346	0.19	0.098
	p-value	0.238	0.704	0.096	0.292	0.6	0.742	0.376	0.577	0.073	0.54	0.025	0.102	0.417
	N	75	75	70	75	49	75	65	75	30	75	42	75	71

Spearman's rho		Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
Age	Correlation Coefficient	0.223	0.273	-0.046	0.045	0.551	0.52	0.377	0.269
	p-value	0.055	0.021	0.692	0.719	0.001	0.001	0.001	0.039
	N	75	72	75	66	75	71	75	59
Time since Diagnosis	Correlation Coefficient	0.174	0.265	-0.015	0.07	0.529	0.436	0.381	0.174
	p-value	0.143	0.028	0.899	0.581	0.001	0.001	0.001	0.199
	N	75	69	75	64	75	68	75	56
Mean pre-transfusion HB	Correlation Coefficient	0.09	0.037	0.157	0.165	0.005	-0.079	-0.04	-0.018
	p-value	0.445	0.758	0.18	0.186	0.964	0.514	0.732	0.892
	N	75	72	75	66	75	71	75	59

Average Requirement HB	Correlation Coefficient	-0.188	-0.094	-0.001	-0.15	-0.129	-0.118	-0.144	-0.169
	p-value	0.107	0.434	0.994	0.23	0.269	0.326	0.219	0.201
	N	75	72	75	66	75	71	75	59
Cost of treatment	Correlation Coefficient	0.072	0.185	0.187	0.083	0.006	0.071	0.137	0.029
	p-value	0.542	0.12	0.109	0.51	0.958	0.558	0.239	0.829
	N	75	72	75	66	75	71	75	59
Time Spent in Hospital	Correlation Coefficient	0.189	0.088	0.035	-0.085	0.11	0.096	0.054	-0.124
	p-value	0.104	0.463	0.768	0.499	0.346	0.427	0.643	0.35
	N	75	72	75	66	75	71	75	59
Cost of Travel	Correlation Coefficient	0.025	0.147	0.068	0.098	-0.023	-0.021	0.09	-0.009
	p-value	0.831	0.221	0.567	0.436	0.846	0.861	0.448	0.948
	N	74	71	74	65	74	70	74	58
Missed School days	Correlation Coefficient	0.051	-0.009	-0.066	-0.058	-0.045	-0.081	-0.015	-0.119
	p-value	0.664	0.939	0.573	0.642	0.702	0.501	0.9	0.369
	N	75	72	75	66	75	71	75	59

Figure 20: Relation between age, time since diagnosis. mean pre-transfusion Hb, average requirement of transfusion, cost of treatment, time spent in hospital, cost of travel, and missed school days with level of depression and coping mechanism

Figure 20.0: Relation between age with level of depression and coping mechanism



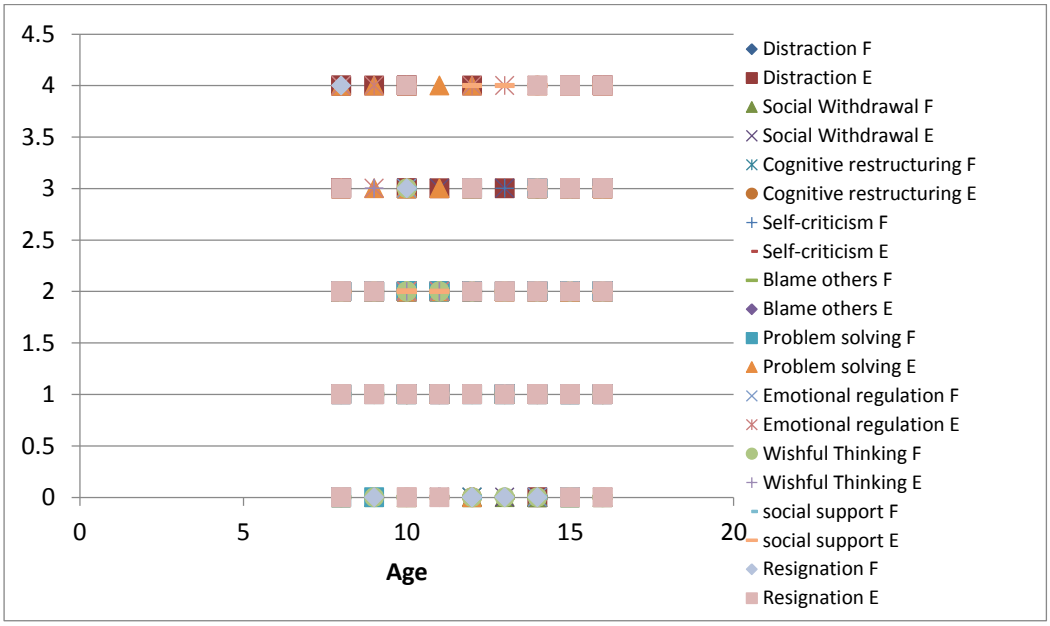
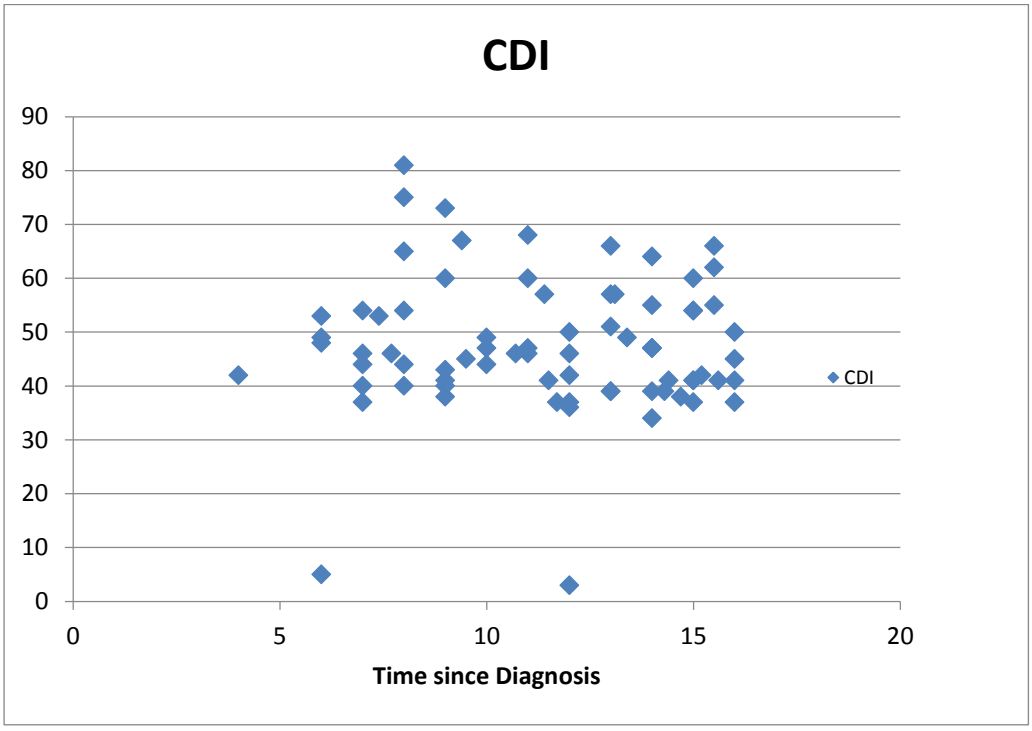


Figure 20.1: Relation between time since diagnosis with level of depression and coping mechanism



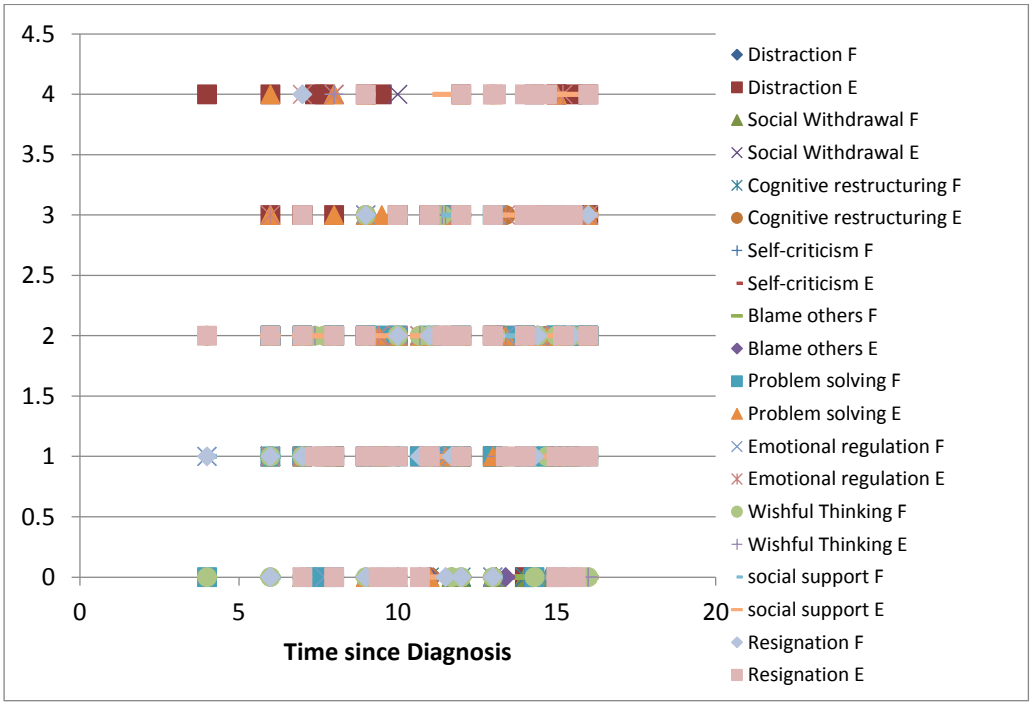
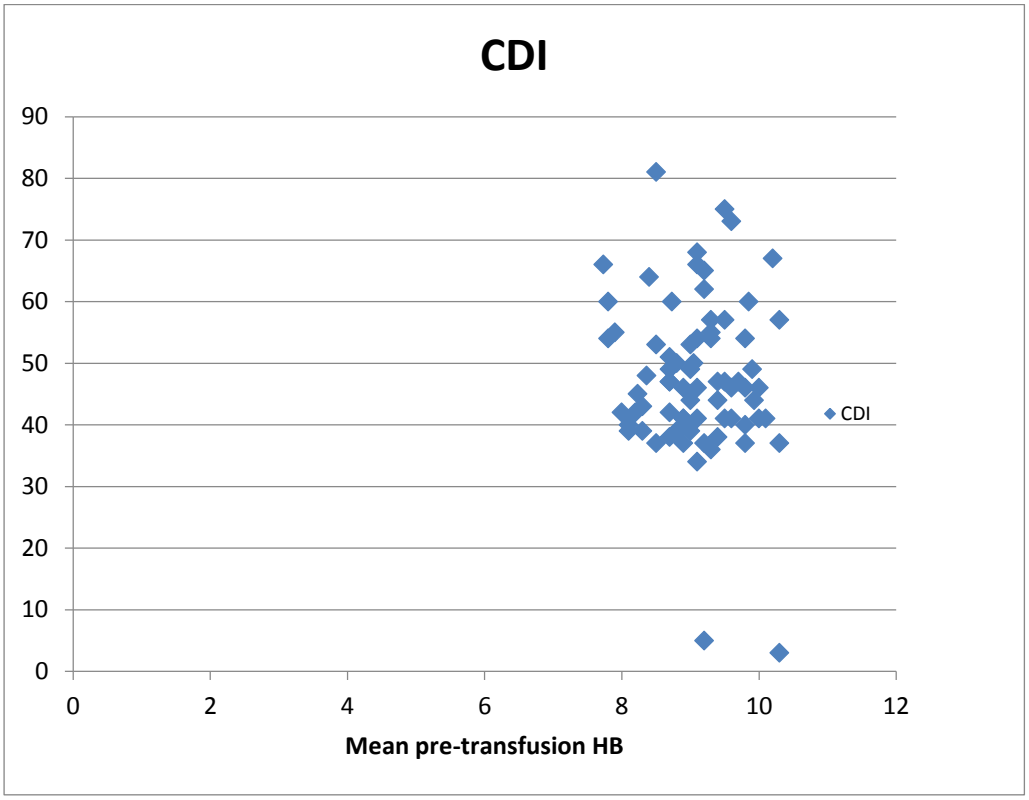


Figure 20.2: Relation between mean pre-transfusion Hb with level of depression and coping mechanism



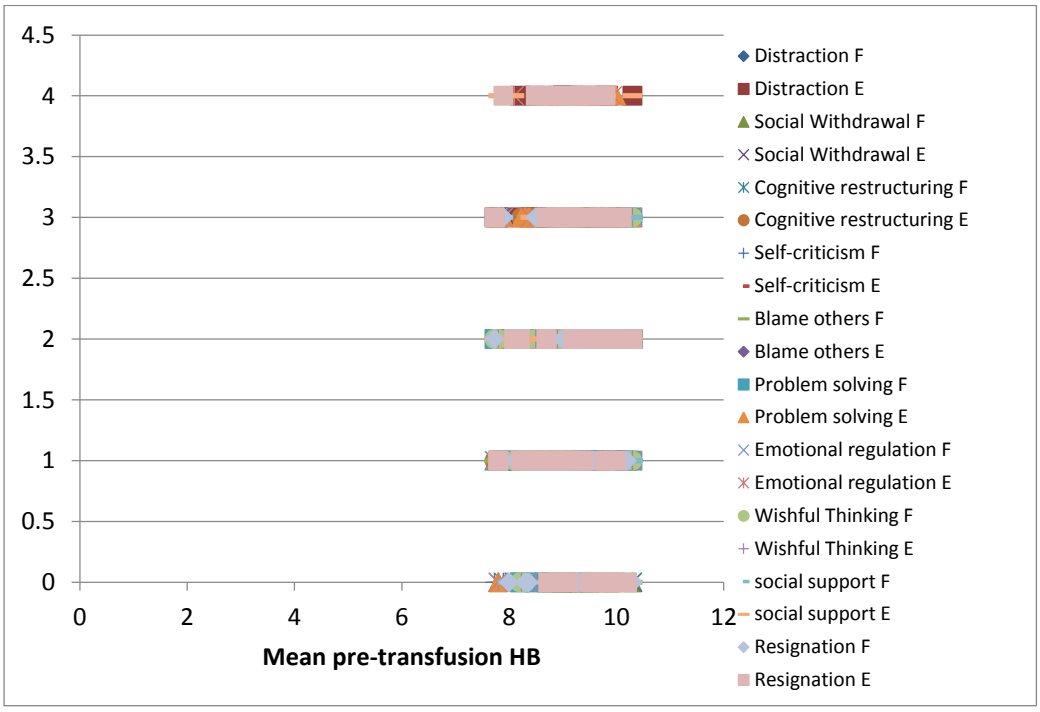
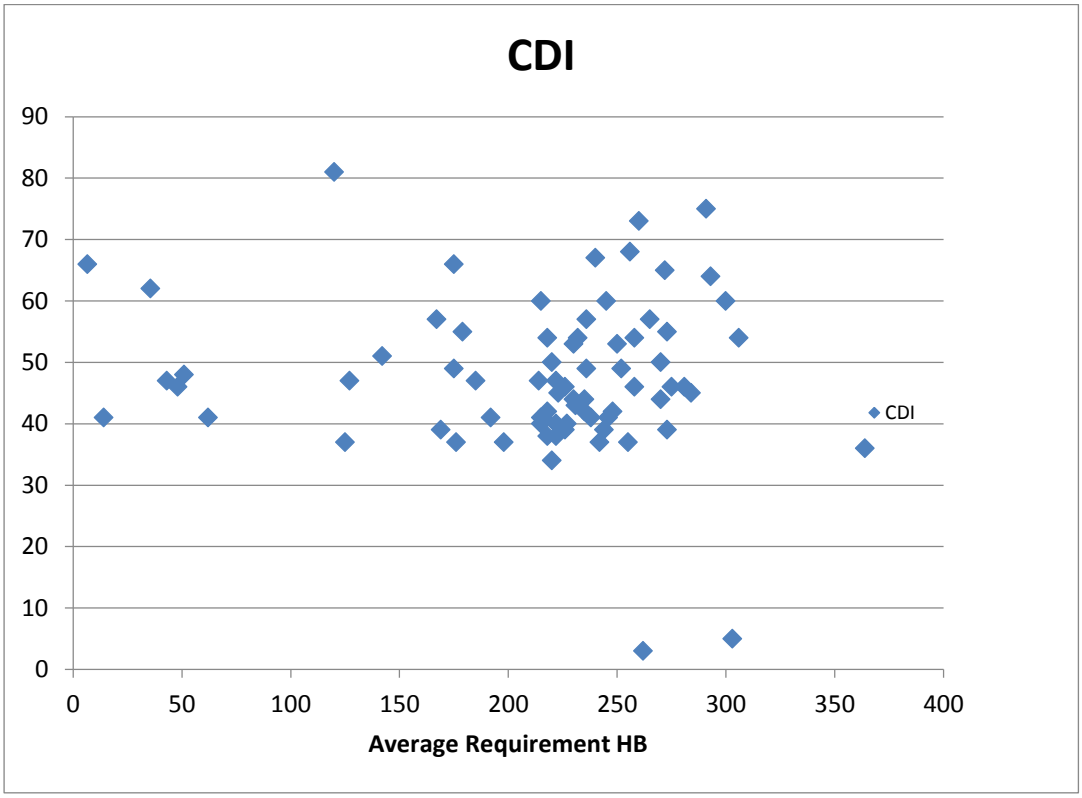


Figure 20.3: Relation between average requirement of transfusion with level of depression and coping mechanism



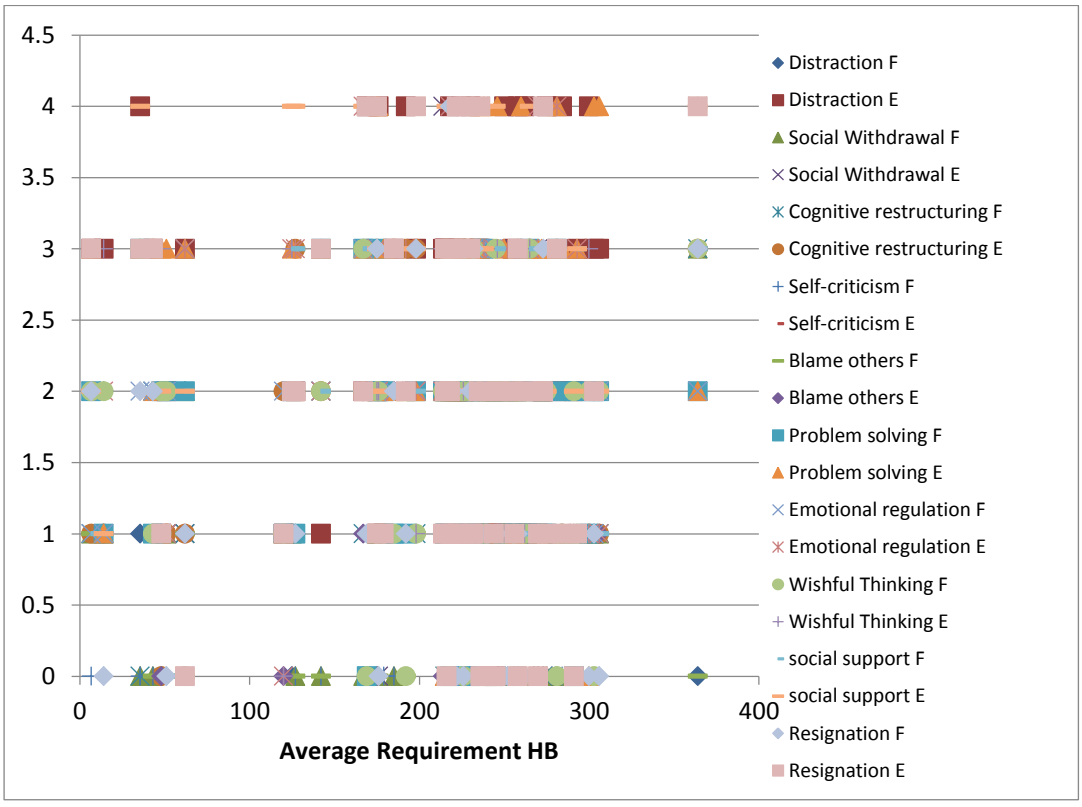
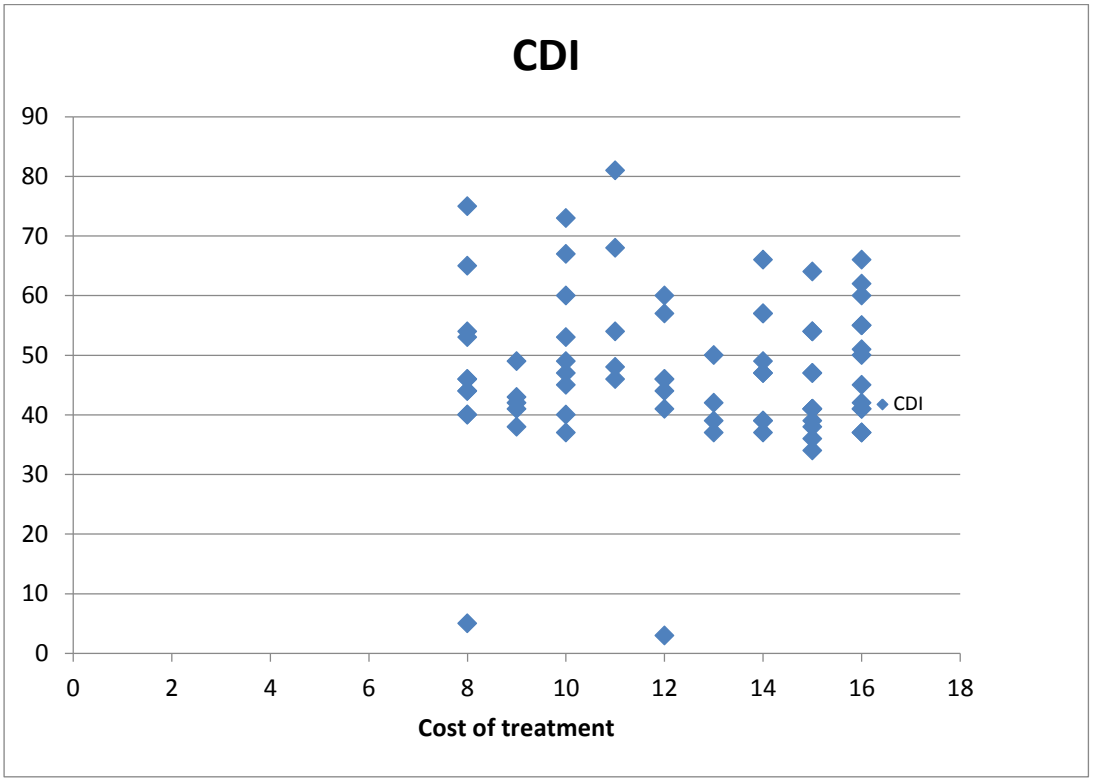


Figure 20.4: Relation between cost of treatment with level of depression and coping mechanism



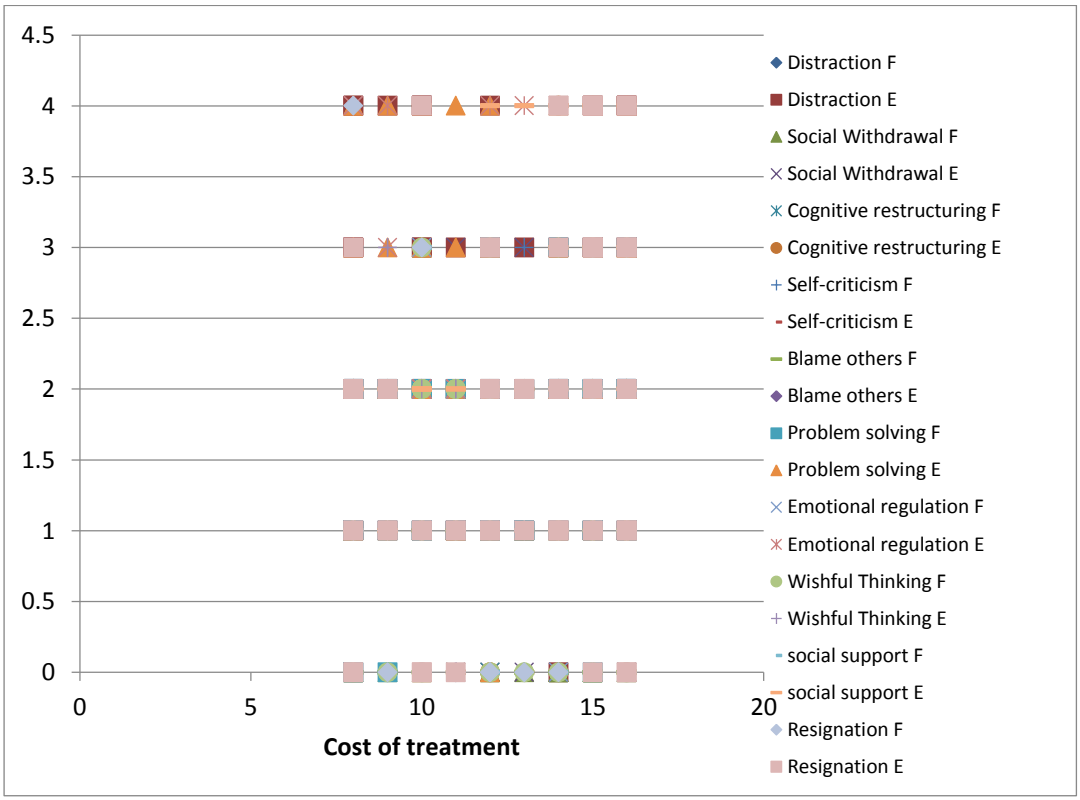
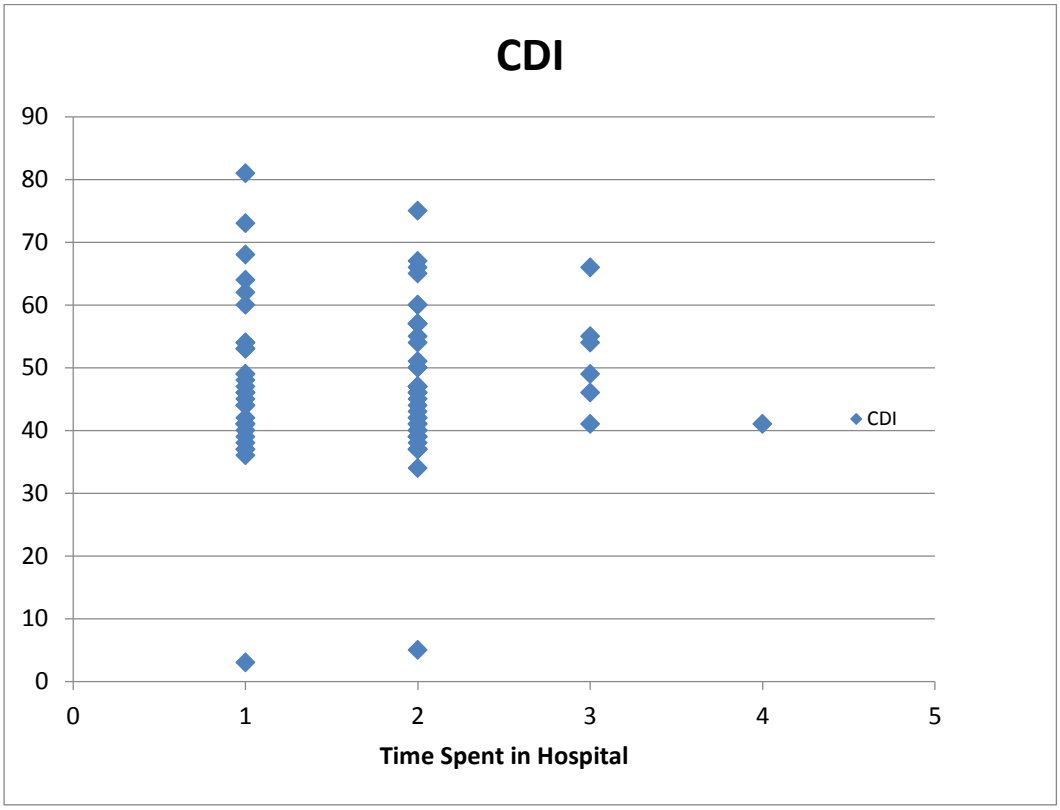


Figure 20.5: Relation between time spent in the hospital with level of depression and coping mechanism



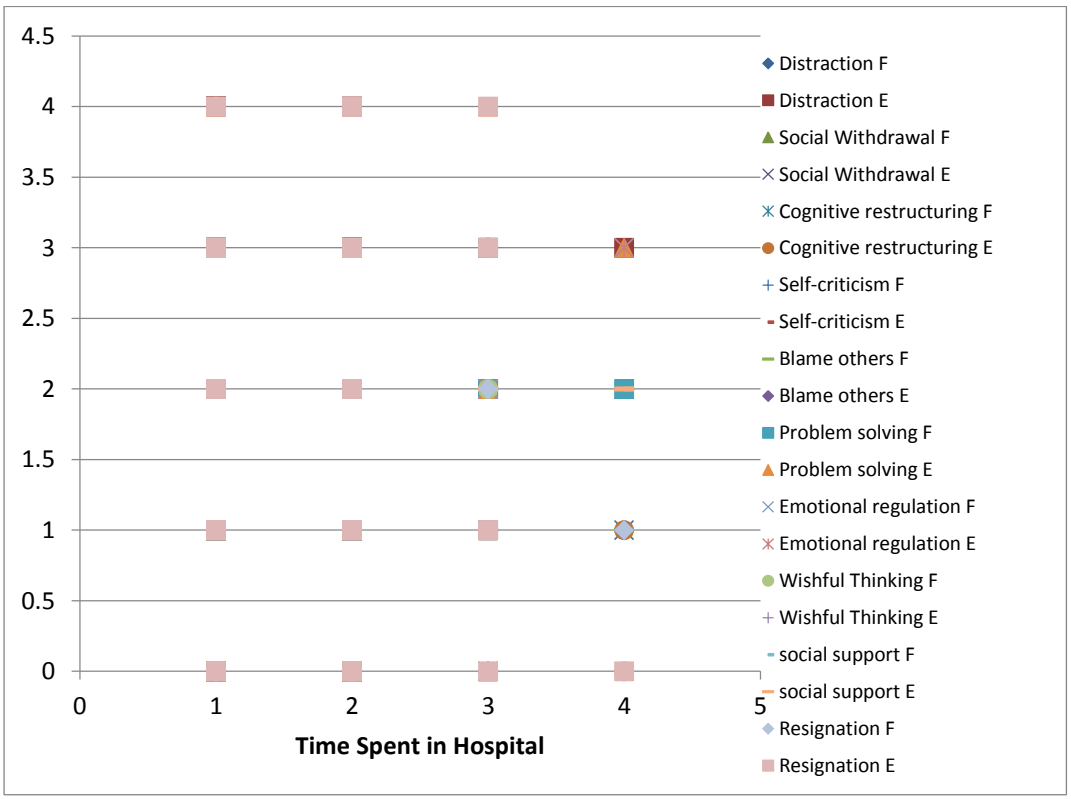
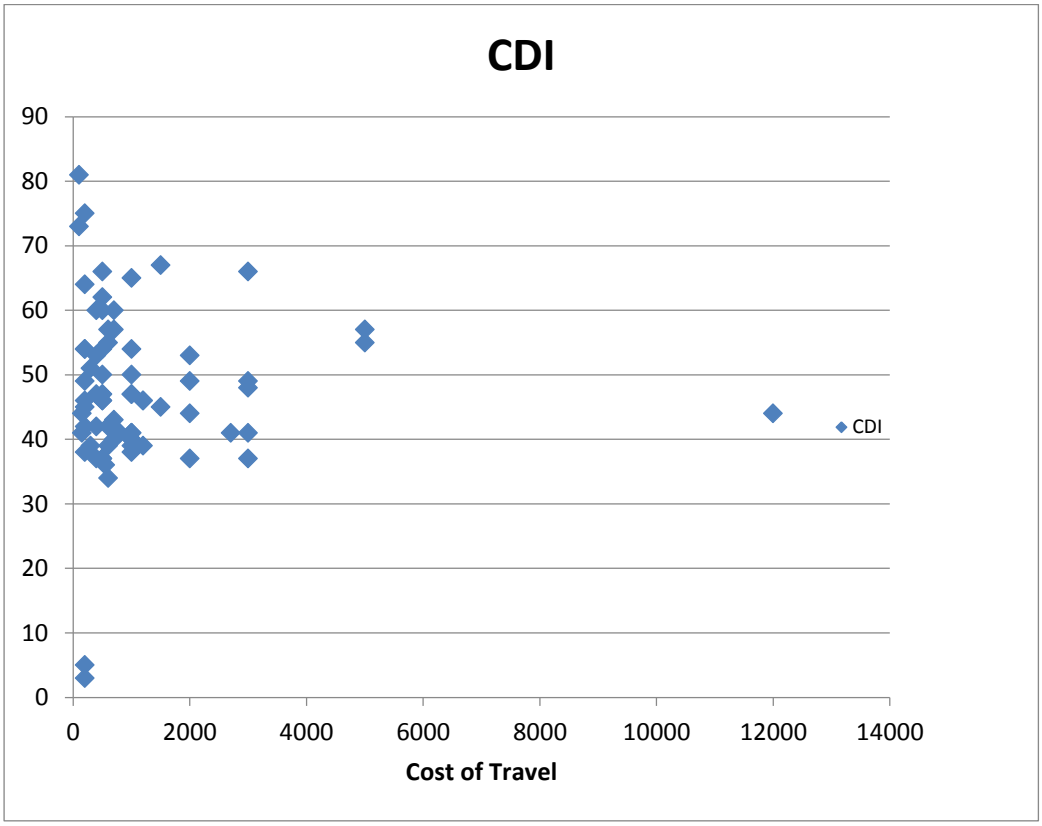


Figure 20.6: Relation between cost of travel, level of depression and coping mechanism



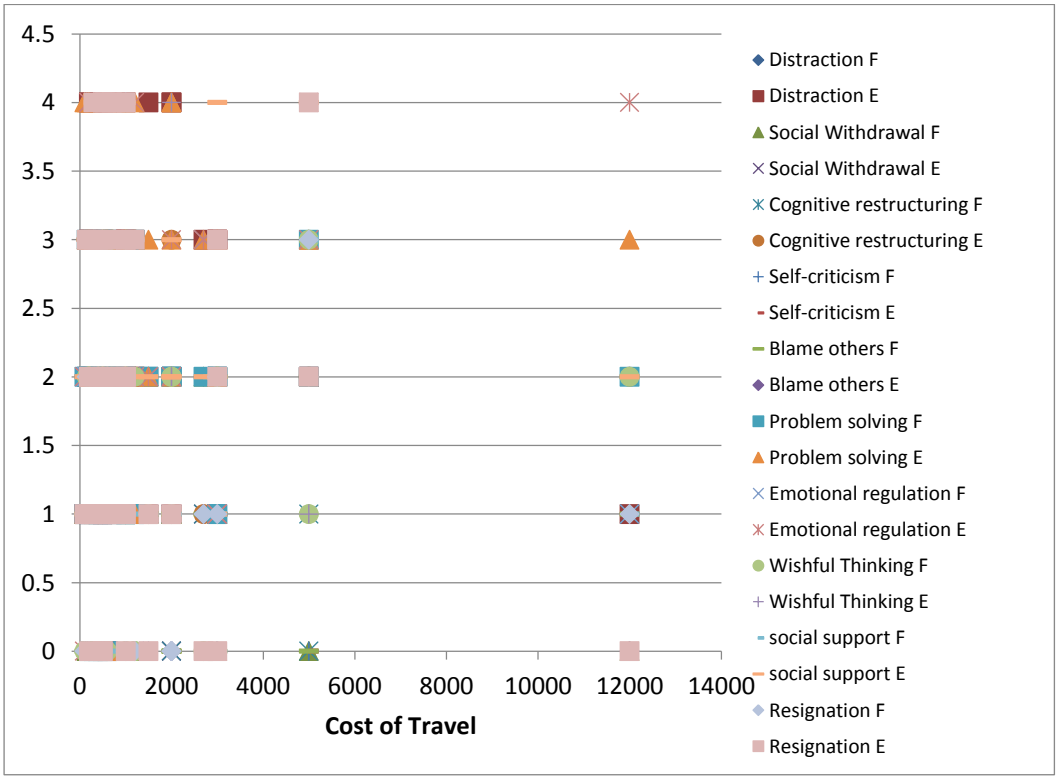
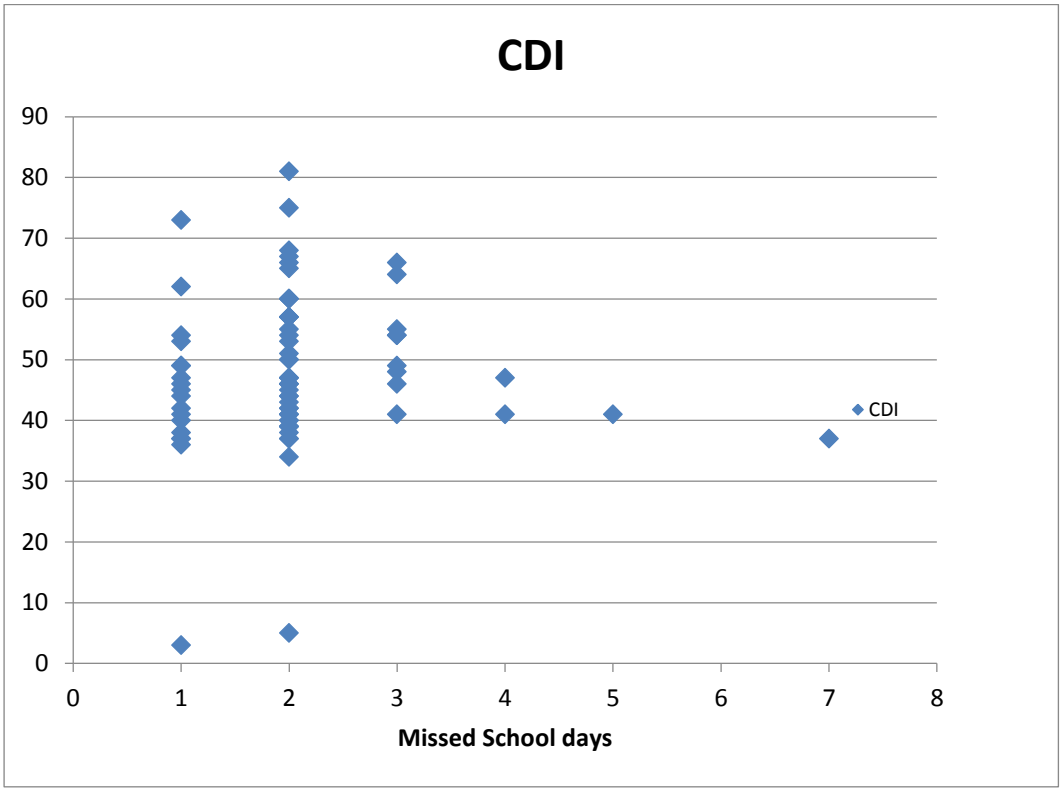


Figure 20.7: Relation between missed school days with level of depression and coping mechanism



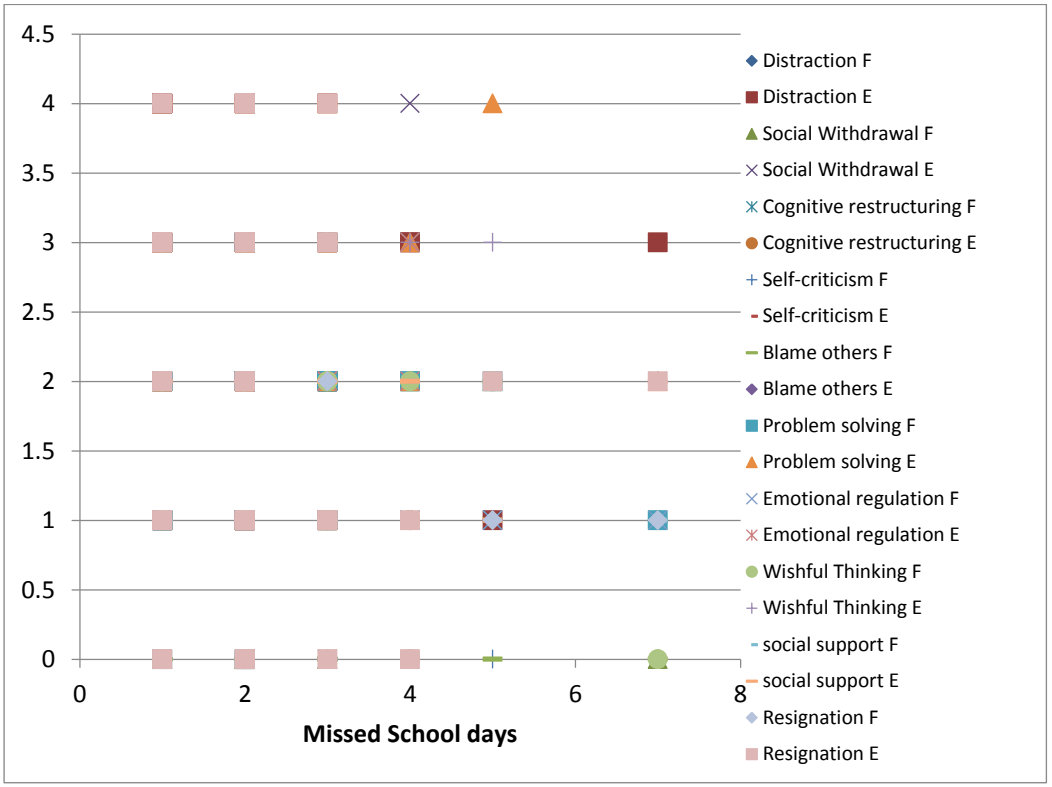


Table 21: Relationship between different categories of emotional awareness, general health and behavioural difficulties

Spearman's rho		Verbal Sharing of Emotions	Acting out	Bodily Awareness	Attending to Others	Analysis of emotions	GHQ-12	Internalizing	Attention	Externalizing	TOTAL
Diffenrentiating emotions	Correlation Coefficient	0.237	0.284	0.322	0.432	0.357	0.274	0.155	-0.056	0.148	0.118
	p-value	0.041	0.014	0.005	0.001	0.002	0.018	0.184	0.634	0.206	0.314
	N	75	75	75	75	75	75	75	75	75	75
Verbal Sharing of Emotions	Correlation Coefficient		0.172	0.321	0.362	0.161	0.070	0.158	0.087	0.213	0.182
	p-value		0.140	0.005	0.001	0.169	0.550	0.177	0.458	0.067	0.118
	N		75	75	75	75	75	75	75	75	75
Acting out	Correlation Coefficient			0.233	0.240	0.255	0.038	0.109	-0.091	0.066	0.042
	p-value			0.044	0.038	0.027	0.747	0.353	0.439	0.573	0.718
Bodily Awareness	N			75	75	75	75	75	75	75	75
	Correlation Coefficient				0.422	0.053	0.125	0.011	0.002	0.363	0.209
	p-value				0.001	0.652	0.287	0.925	0.987	0.001	0.071
Attending to Others	N				75	75	75	75	75	75	75
	Correlation Coefficient					0.474	0.154	0.135	0.115	0.245	0.259
	p-value					0.001	0.187	0.249	0.325	0.034	0.025
	N					75	75	75	75	75	75
Analysis of emotions	Correlation Coefficient					1.000	0.191	0.264	0.118	0.126	0.209
	p-value						0.101	0.022	0.315	0.282	0.072
	N						75	75	75	75	75

Figure 21: Relationship between different categories of emotional awareness, general health and behavioural difficulties

Figure 21.0: Relationship between general health and behavioural difficulties

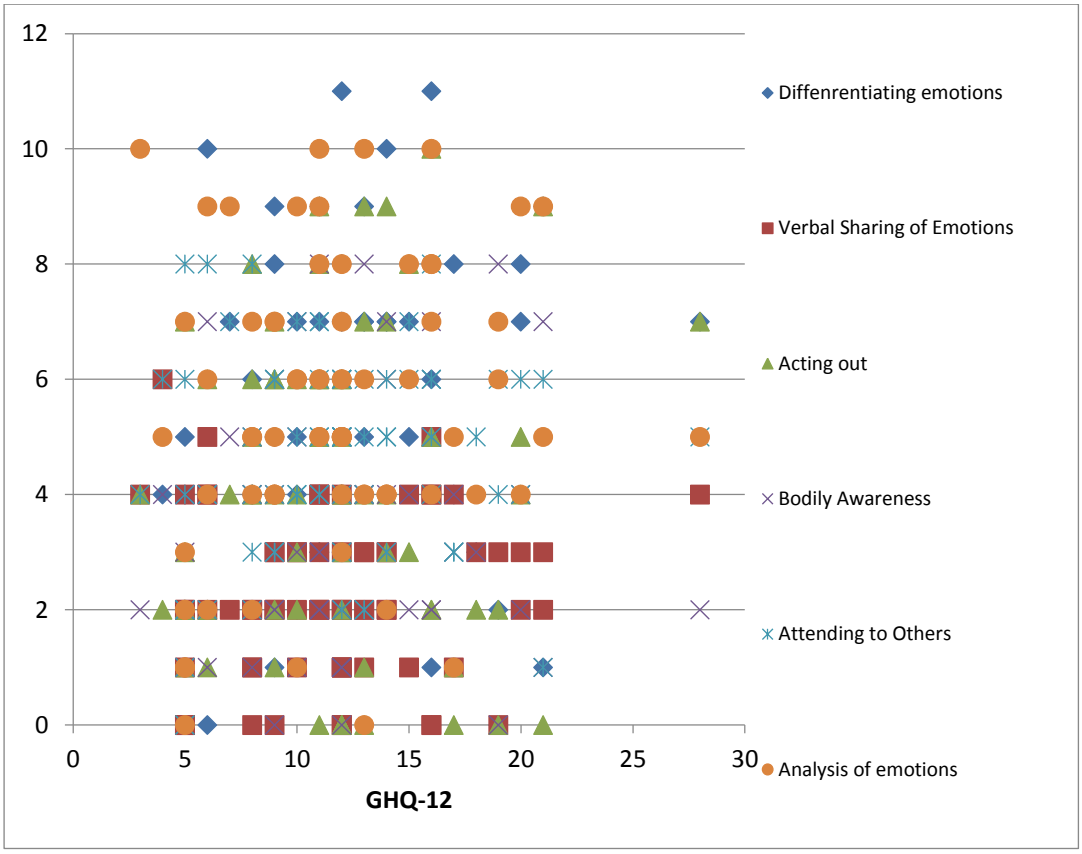
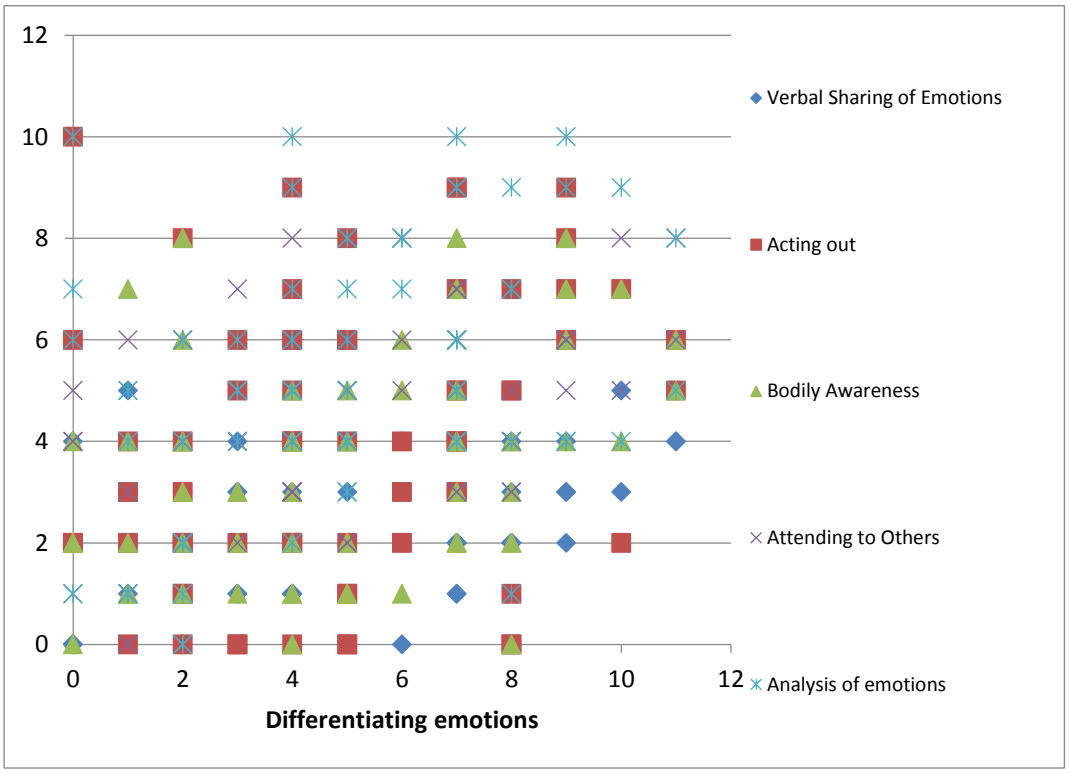


Figure 21.1: Relationship between differentiating emotion, different categories of emotional awareness and behavioural difficulties



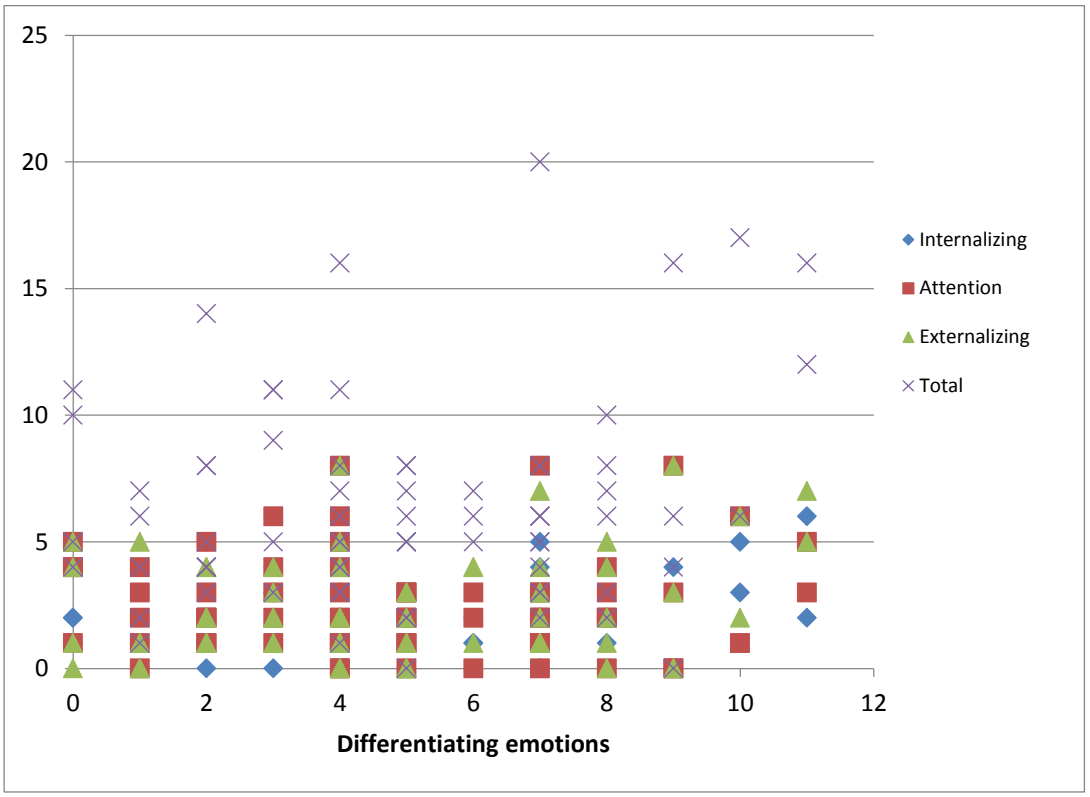
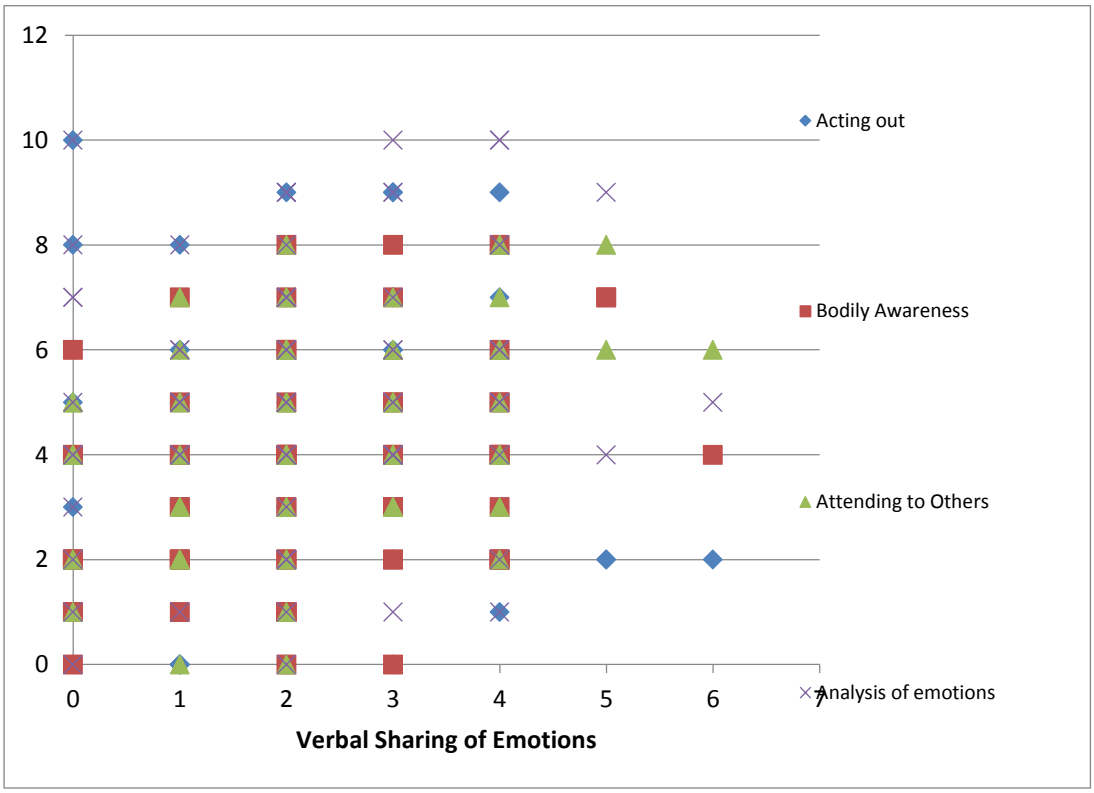


Figure 21.2: Relationship between verbal sharing of emotion, different categories of emotional awareness and behavioural difficulties



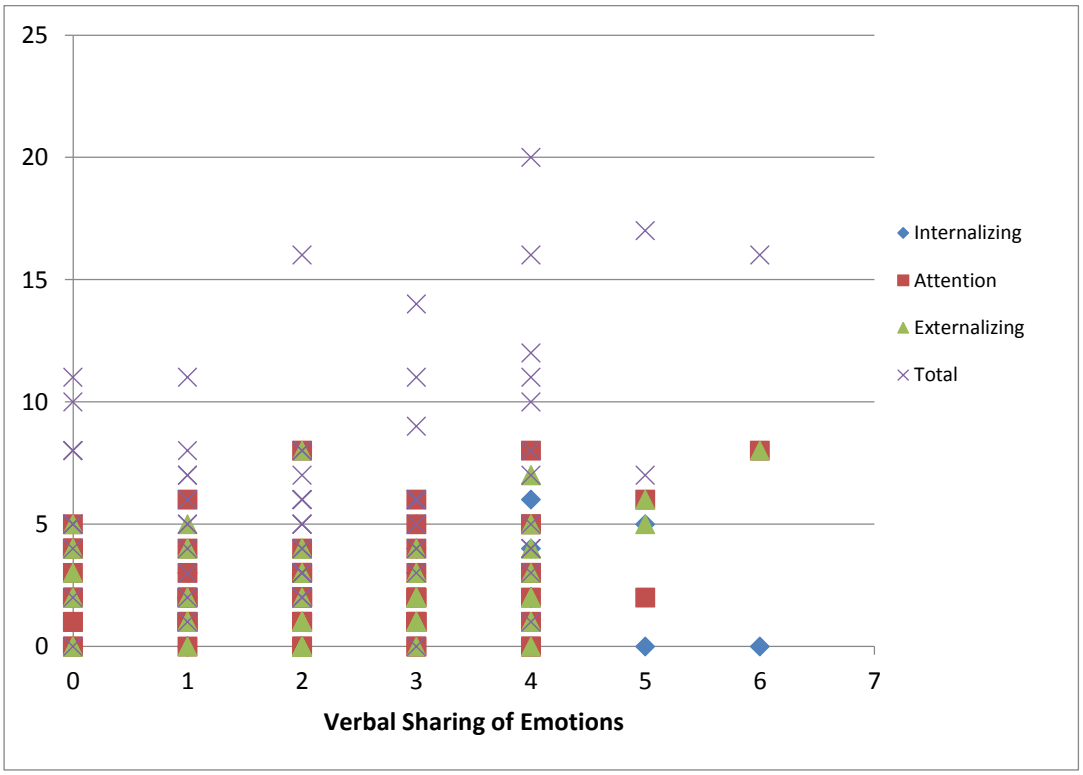
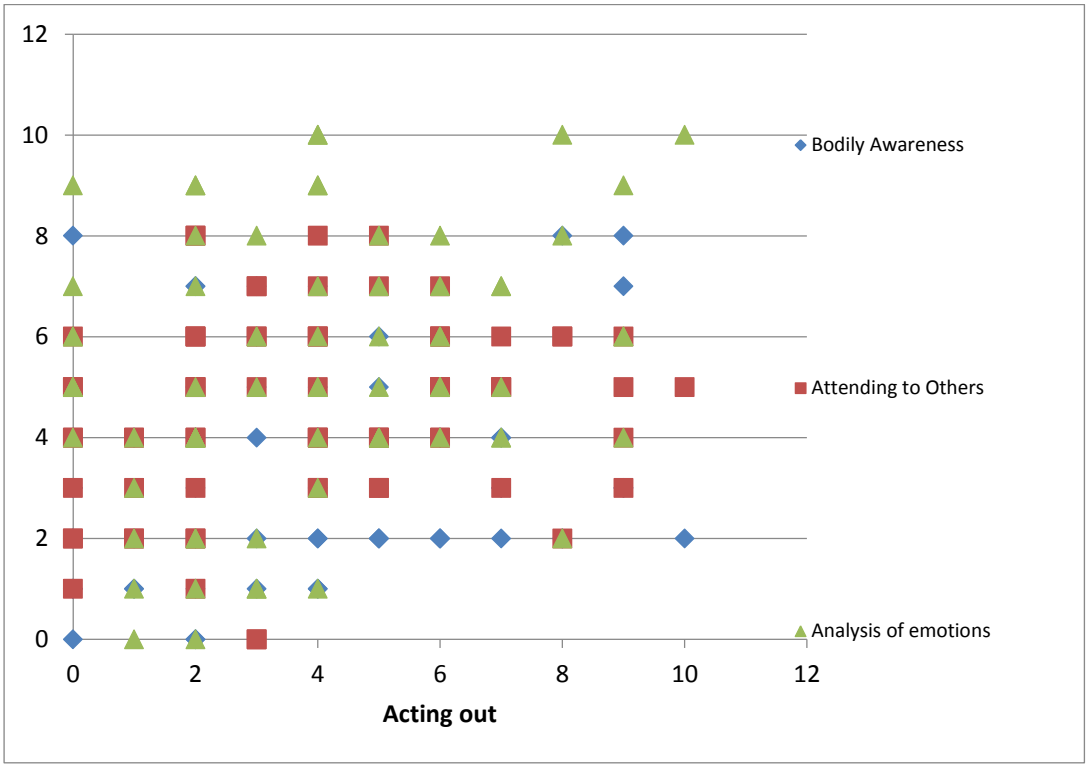


Figure 21.3: Relationship between acting out of emotion, different categories of emotional awareness and behavioural difficulties



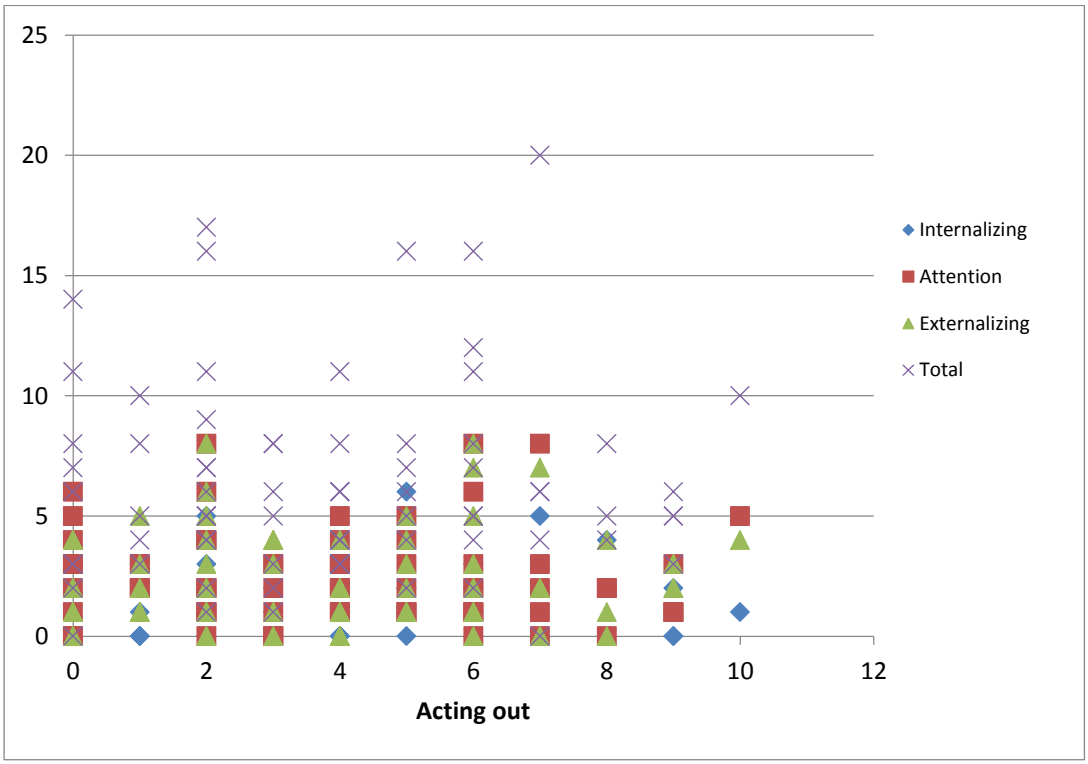
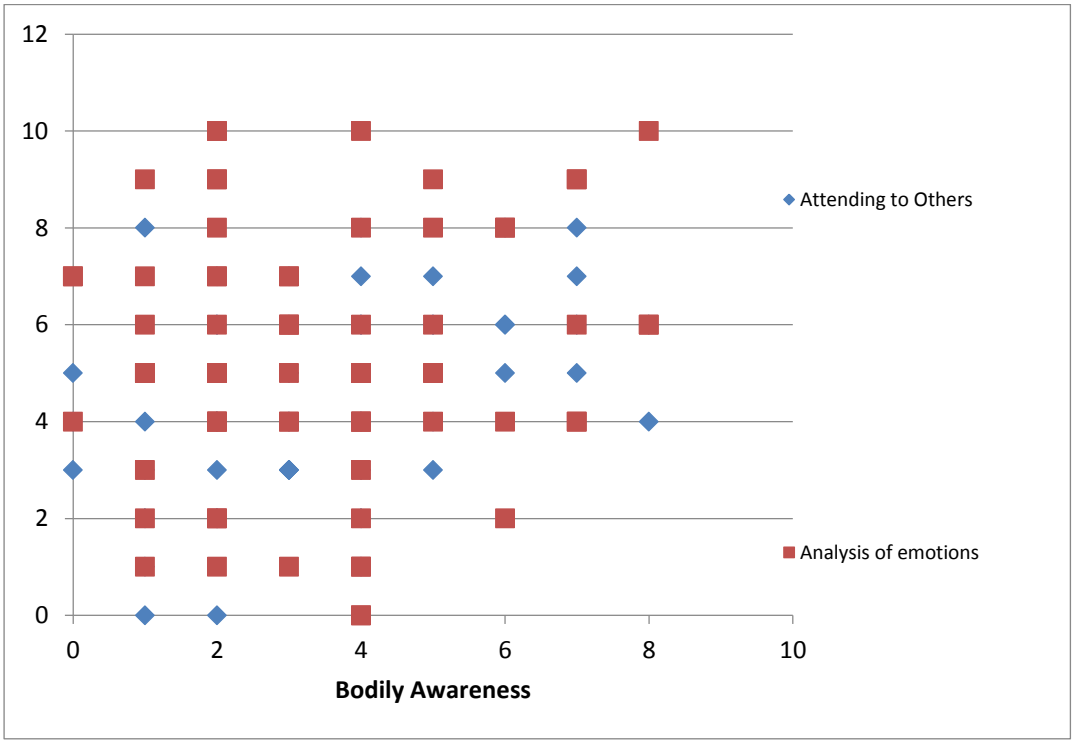


Figure 21.4: Relationship between bodily awareness, different categories of emotional awareness and behavioural difficulties



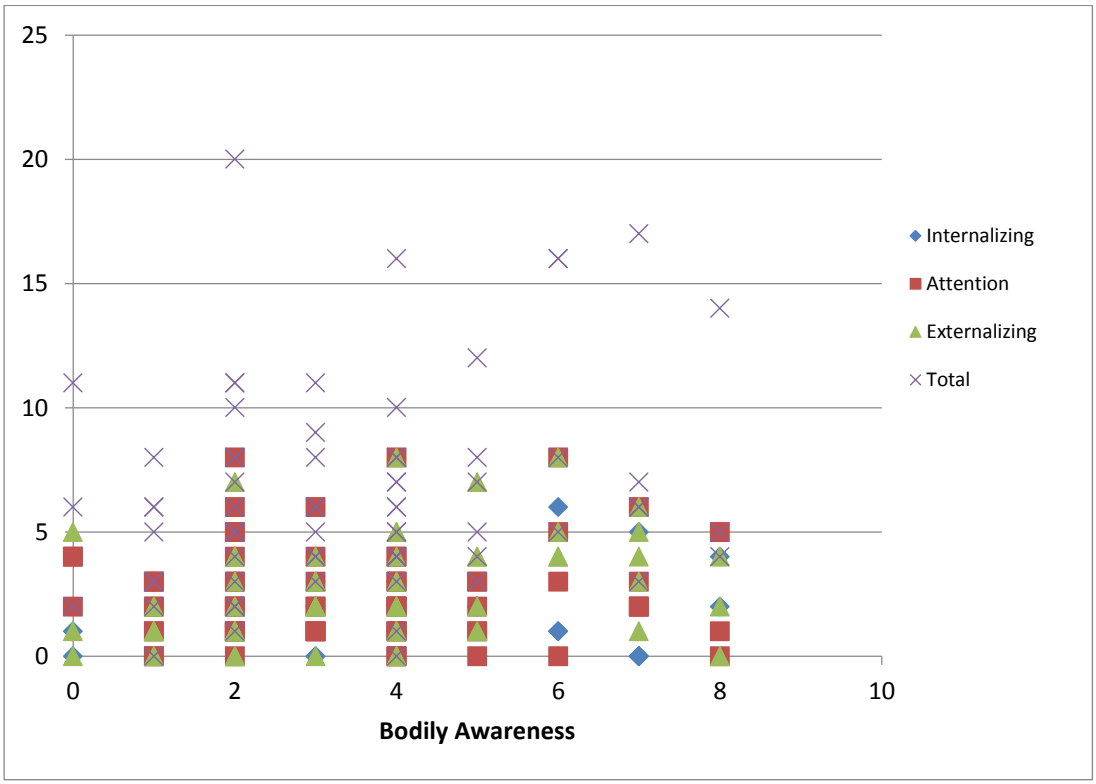
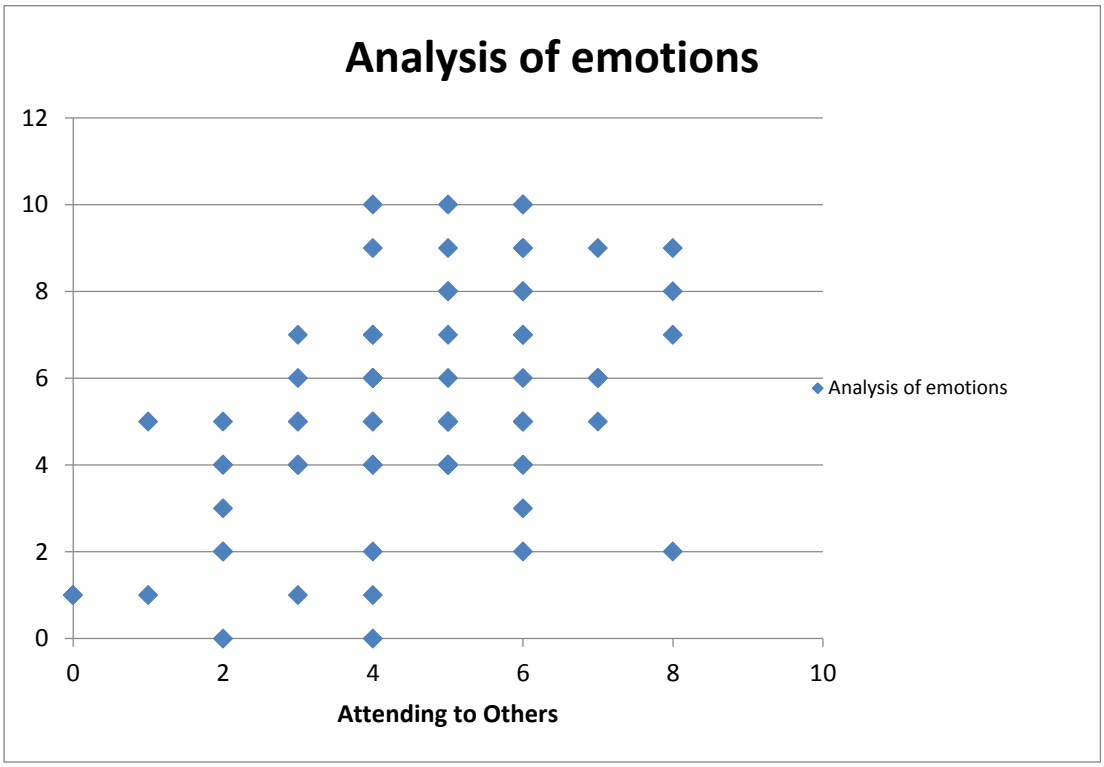


Figure 21.5: Relationship between attenting to others emotion, different categories of emotional awareness and behavioural difficulties



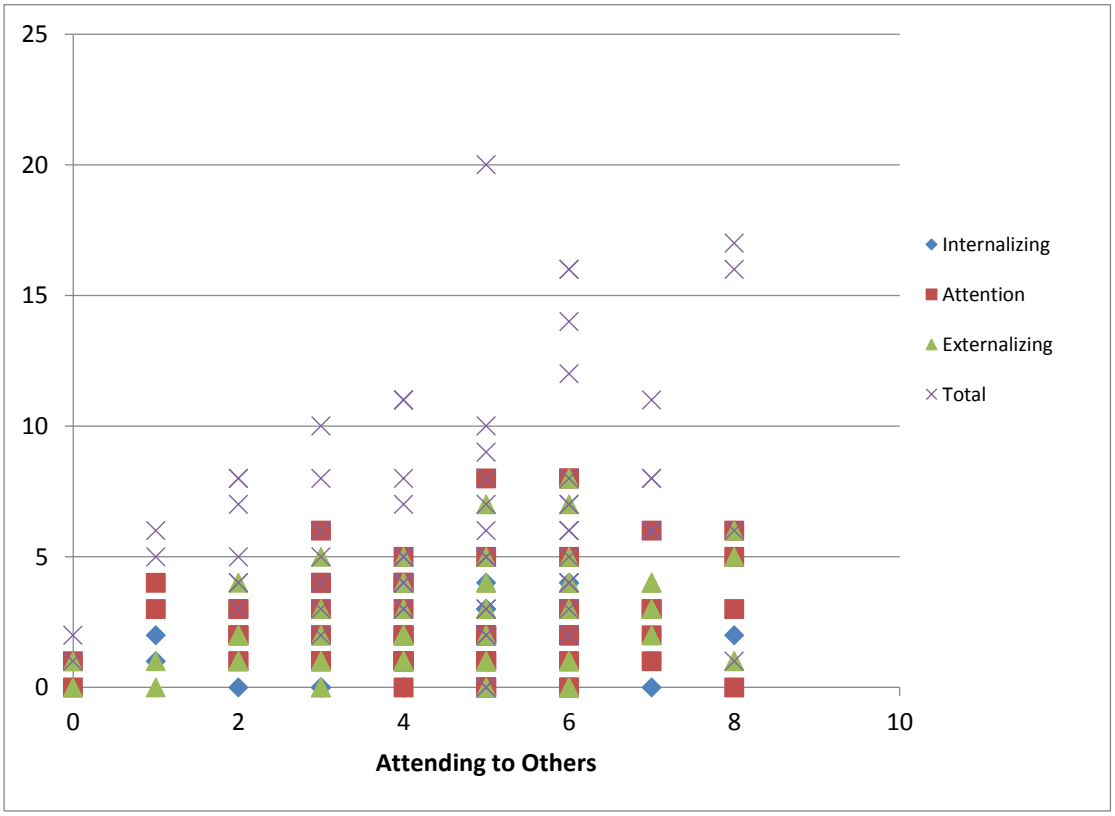
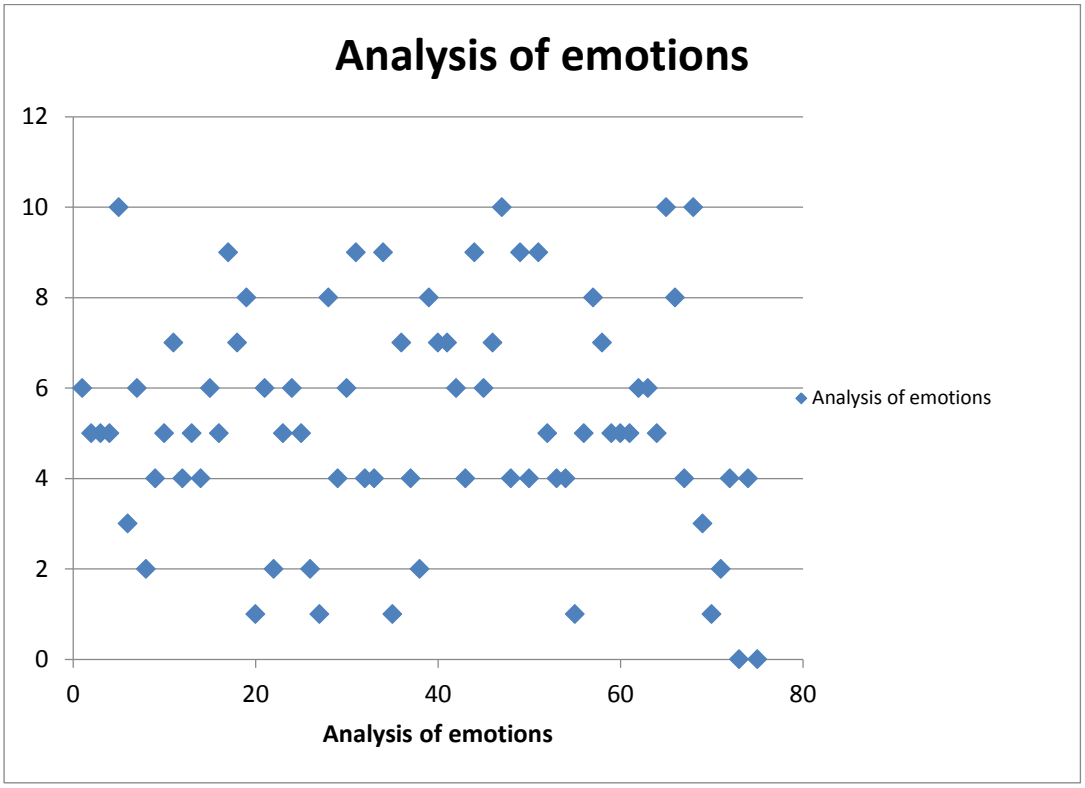


Figure 21.6: Relationship between analysis of emotion, different categories of emotional awareness and behavioural difficulties



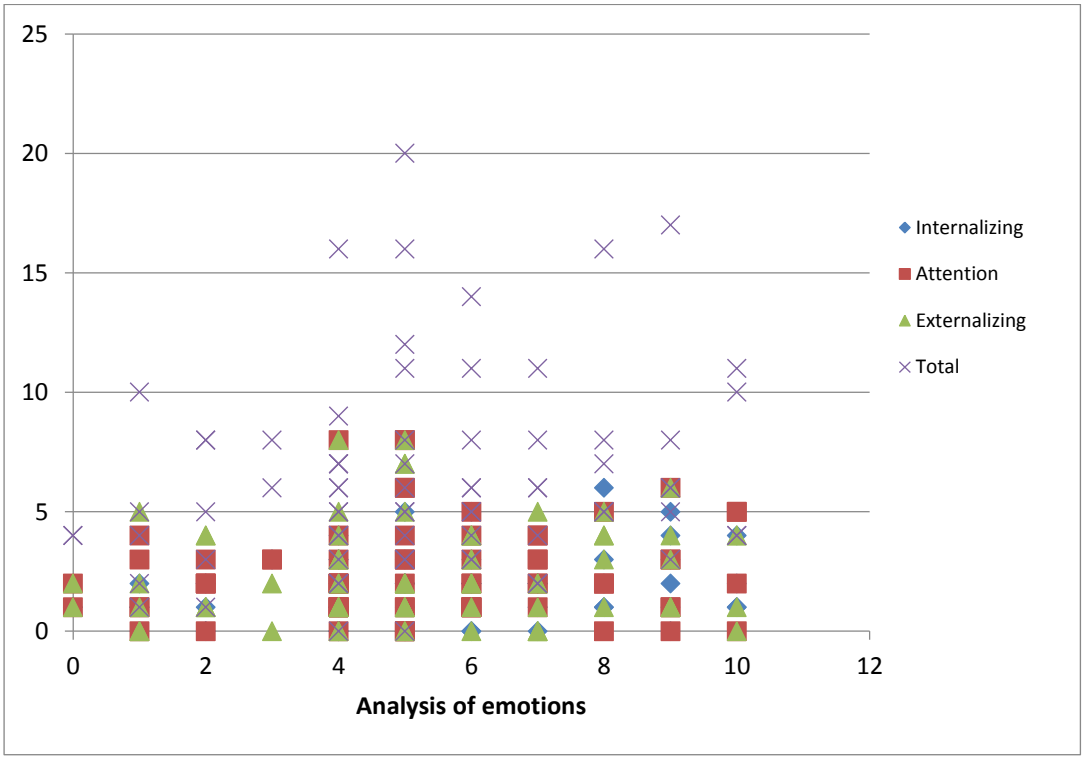
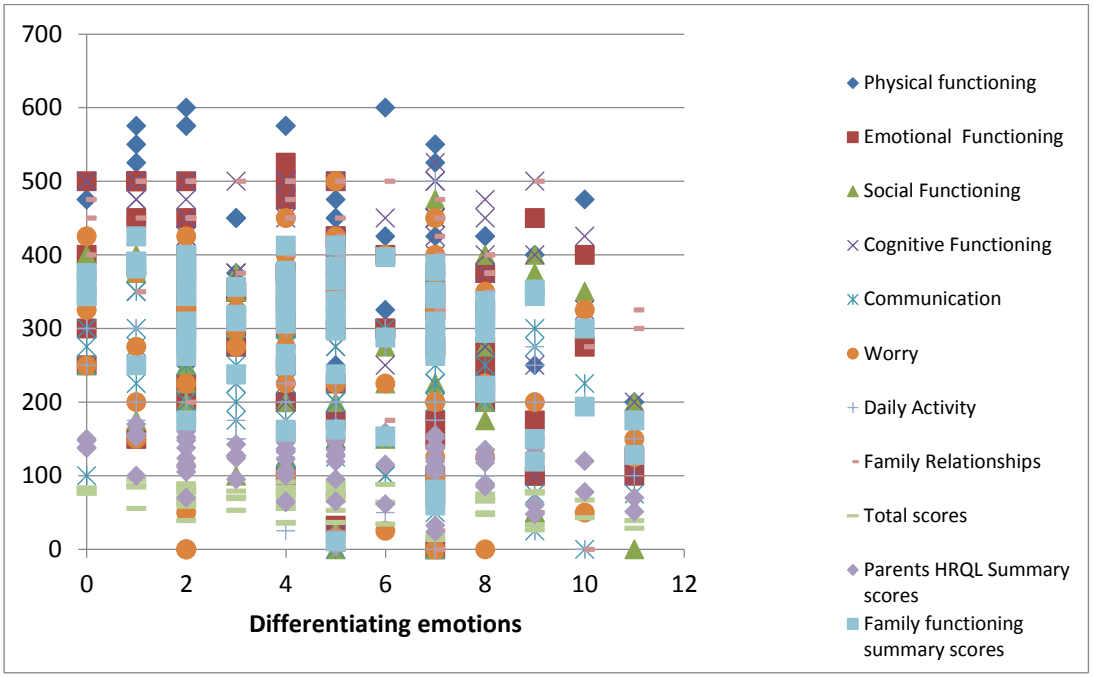
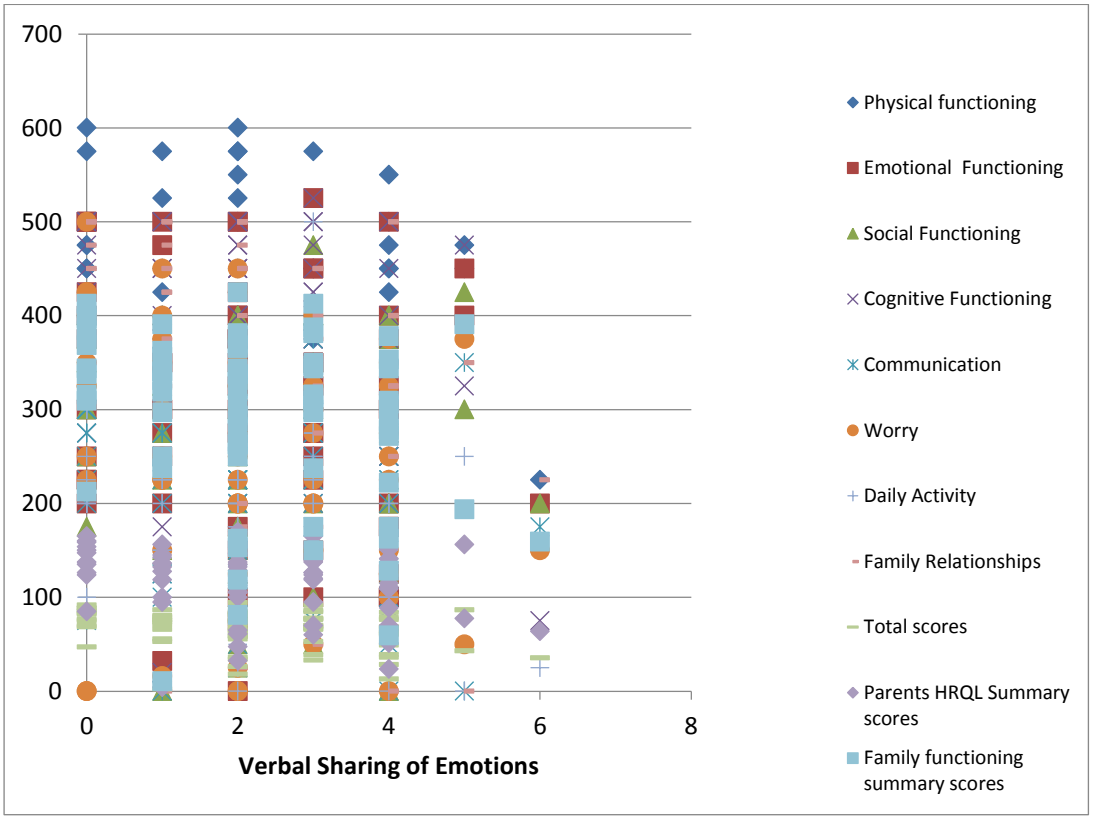


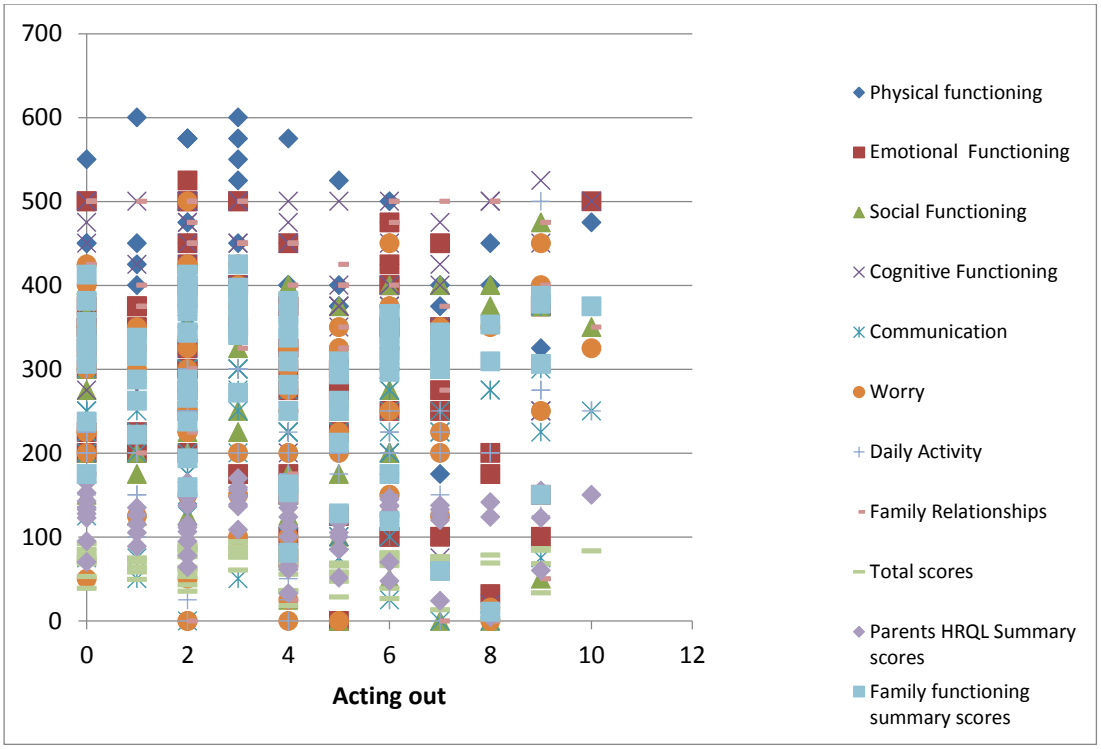
Table 22: Relationship between different categories of emotional awareness and family functioning

Spearman's rho		Physical	Emotional	Social	Cognitive	Communication	Worry	Daily Activity	FAMILY FUNCTIONING	TOTAL SCORES	PARENTS HRQL SUMMARY	FAMILY FUNCTIONING SUMMARY SCORES
Diffenrentiating emotions	Correlation Coefficient	-0.304	-0.394	-0.202	-0.273	-0.259	-0.190	-0.338	-0.297	-0.377	-0.377	-0.377
	p-value	0.008	0.001	0.082	0.018	0.025	0.103	0.003	0.010	0.001	0.001	0.001
	N	75	75	75	75	75	75	75	75	75	75	75
Verbal Sharing of Emotions	Correlation Coefficient	-0.178	-0.160	0.025	-0.283	-0.199	-0.273	-0.191	-0.432	-0.282	-0.282	-0.282
	p-value	0.126	0.170	0.832	0.014	0.087	0.018	0.100	0.001	0.014	0.014	0.014
	N	75	75	75	75	75	75	75	75	75	75	75
Acting out	Correlation Coefficient	-0.254	-0.234	-0.012	-0.045	-0.017	-0.059	-0.071	-0.174	-0.116	-0.116	-0.116
	p-value	0.028	0.043	0.919	0.701	0.888	0.613	0.547	0.136	0.323	0.323	0.323
Bodily Awareness	N	75	75	75	75	75	75	75	75	75	75	75
	Correlation Coefficient	-0.299	-0.203	-0.162	-0.197	-0.040	-0.141	-0.001	-0.160	-0.193	-0.193	-0.193
	p-value	0.009	0.081	0.165	0.090	0.734	0.226	0.992	0.169	0.096	0.096	0.096
Attending to Others	N	75	75	75	75	75	75	75	75	75	75	75
	Correlation Coefficient	-0.154	-0.156	-0.228	-0.301	-0.228	-0.141	-0.346	-0.415	-0.282	-0.282	-0.282
	p-value	0.188	0.182	0.049	0.009	0.050	0.228	0.002	0.001	0.014	0.014	0.014
	N	75	75	75	75	75	75	75	75	75	75	75
Analysis of emotions	Correlation Coefficient	-0.139	-0.194	-0.153	-0.213	-0.289	-0.018	-0.220	-0.242	-0.228	-0.228	-0.228
	p-value	0.236	0.095	0.190	0.067	0.012	0.878	0.058	0.037	0.049	0.049	0.049
	N	75	75	75	75	75	75	75	75	75	75	75

Figure 22: Relationship between different categories of emotional awareness and family functioning



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8
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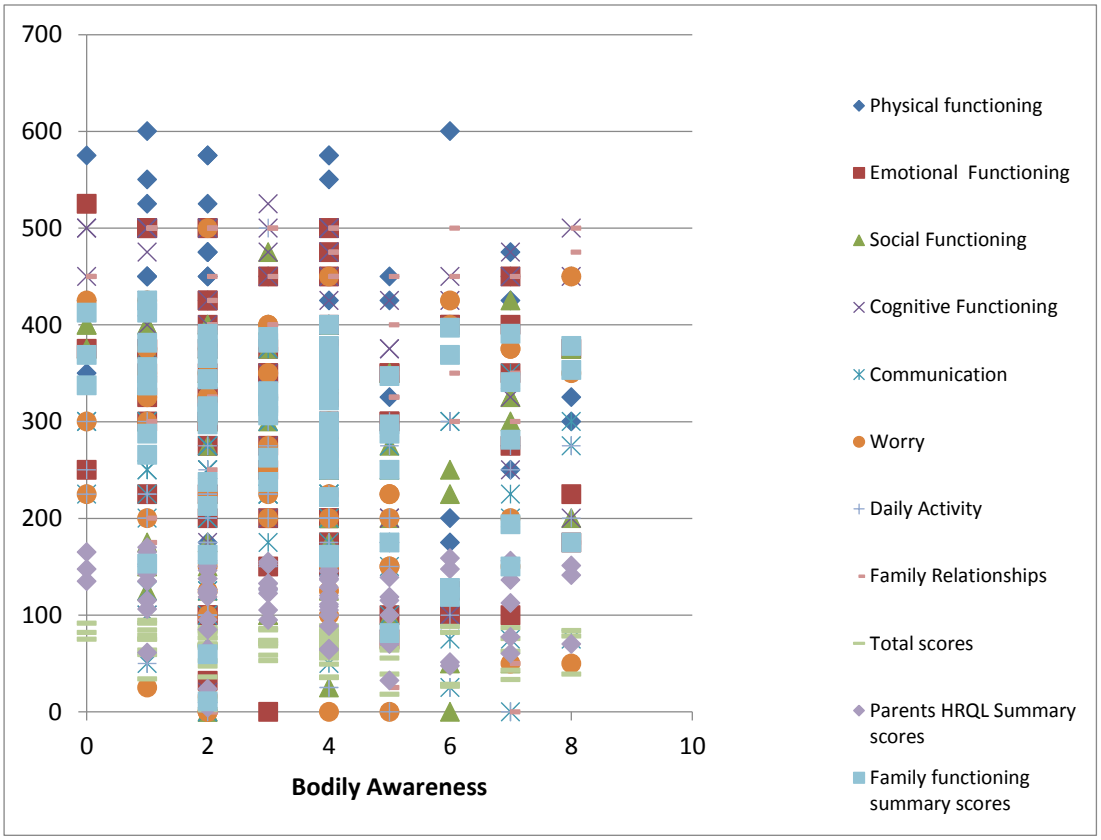
12
Acting out
Physical functioning
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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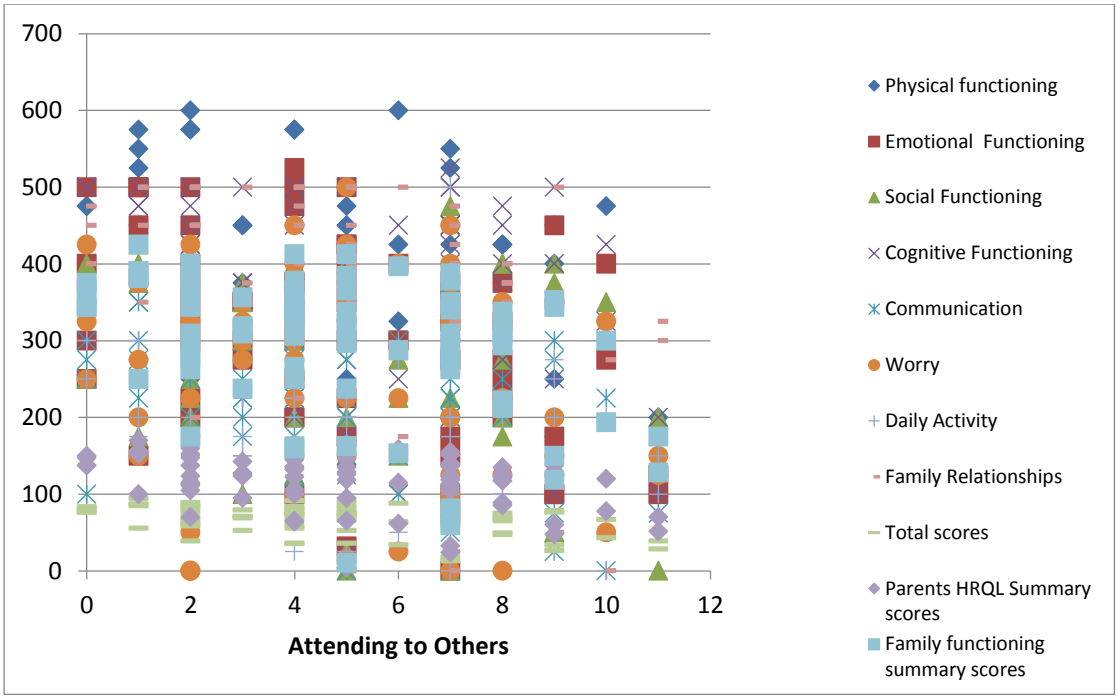
Bodily Awareness
Physical functioning
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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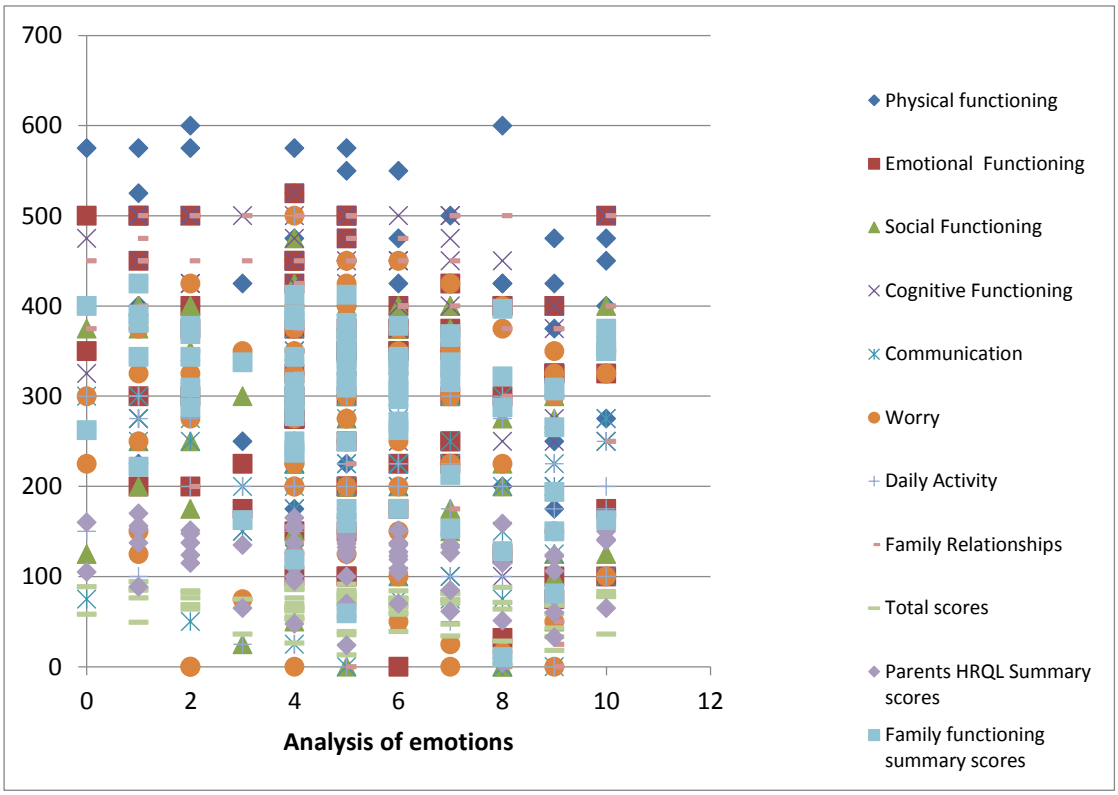
Physical functioning
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores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8
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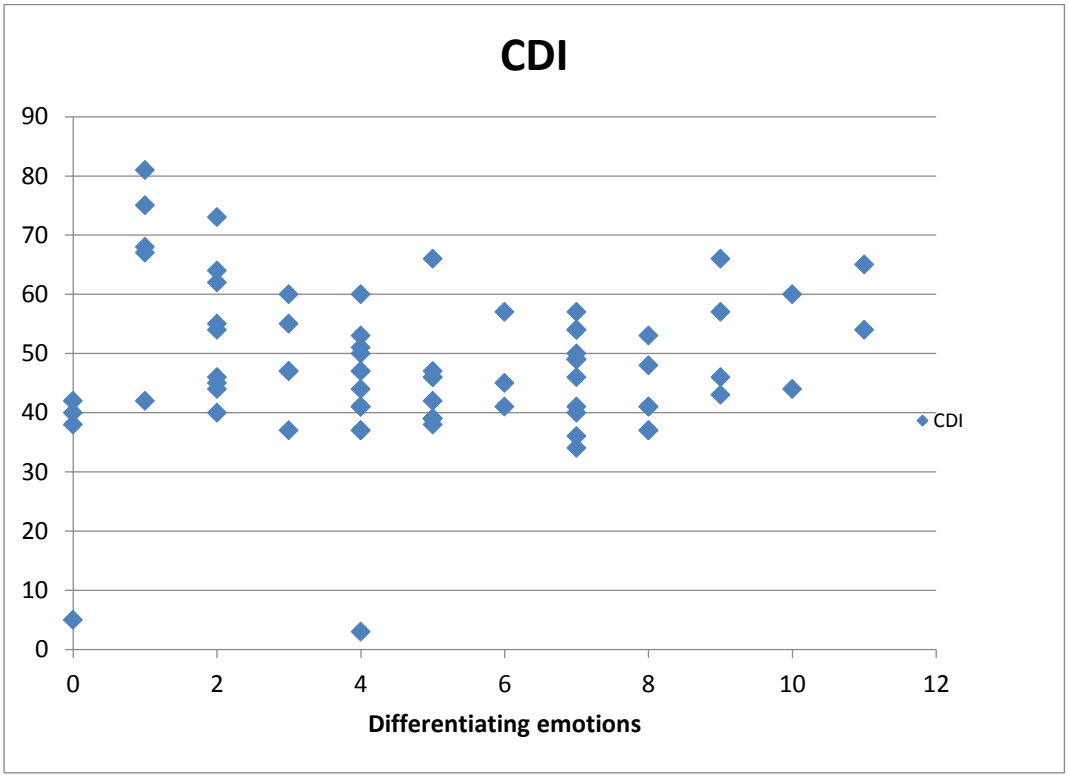
12
Analysis of emotions
Physical functioning
Emotional Functioning
Social Functioning
Cognitive Functioning
Communication
Worry
Daily Activity
Family Relationships
Total scores
Parents HRQL Summary scores
Family functioning summary scores

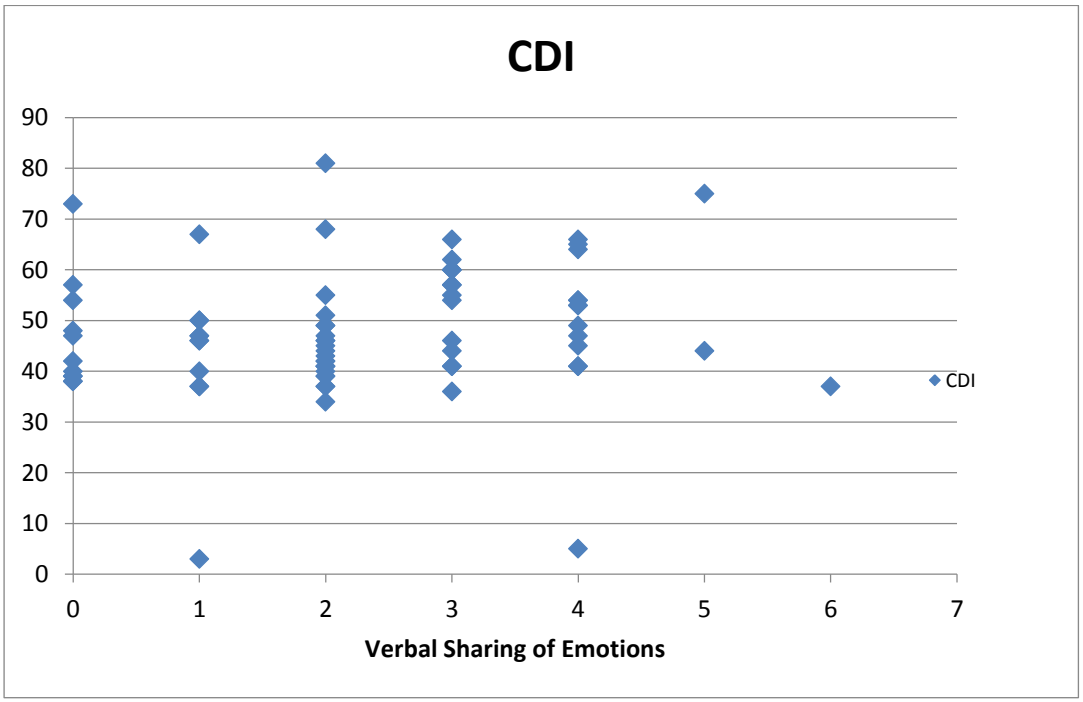
Table 23: Relationship between different categories of emotional awareness, level of depression and coping strategies

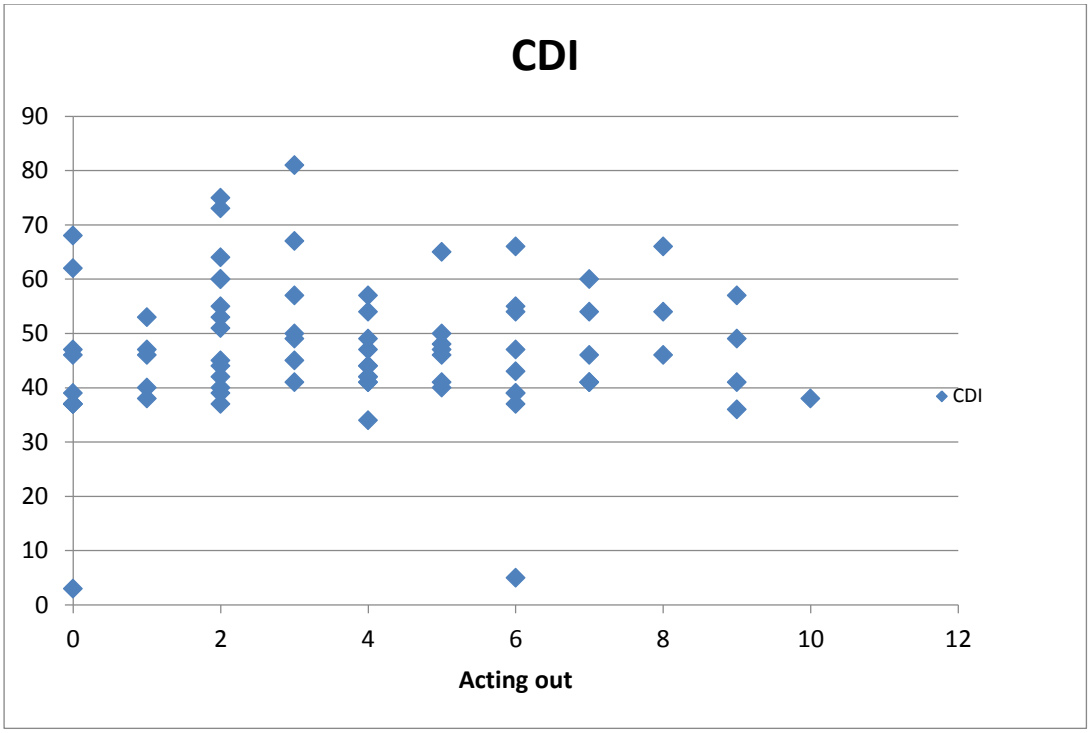
Spearman's rho		CDI	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Baming others E
Diffenrentiating emotions	Correlation Coefficient	-0.038	0.1	-0.141	0.016	-0.275	0.02	0.005	0.206	0.1	0.121	-0.191
	p-value	0.746	0.392	0.243	0.892	0.056	0.864	0.97	0.077	0.599	0.301	0.226
	N	75	75	70	75	49	75	65	75	30	75	42
Verbal Sharing of Emotions	Correlation Coefficient	0.234	0.021	0.006	-0.088	-0.188	-0.02	-0.125	0.081	0.385	0.055	0.17
	p-value	0.043	0.859	0.96	0.452	0.196	0.865	0.321	0.491	0.036	0.636	0.282
	N	75	75	70	75	49	75	65	75	30	75	42
Acting out	Correlation Coefficient	0.019	0.097	-0.302	0.366	-0.193	0.267	0.115	0.257	0.21	0.188	-0.055
	p-value	0.871	0.408	0.011	0.001	0.183	0.021	0.362	0.026	0.265	0.106	0.732
Bodily Awareness	N	75	75	70	75	49	75	65	75	30	75	42
	Correlation Coefficient	0.234	0.012	-0.07	0.112	-0.144	-0.126	-0.048	0.185	-0.052	0.104	0.04
	p-value	0.044	0.915	0.563	0.338	0.324	0.283	0.703	0.111	0.784	0.373	0.801
Attending to Others	N	75	75	70	75	49	75	65	75	30	75	42
	Correlation Coefficient	-0.003	-0.041	-0.218	-0.044	-0.238	0.108	-0.046	0.223	0.079	0.085	0.131
	p-value	0.977	0.726	0.07	0.707	0.099	0.355	0.718	0.054	0.678	0.468	0.407
	N	75	75	70	75	49	75	65	75	30	75	42
Analysis of emotions	Correlation Coefficient	-0.151	0.227	-0.071	-0.161	-0.403	0.223	0.074	0.093	0.238	0.124	0.243
	p-value	0.197	0.05	0.561	0.168	0.004	0.054	0.559	0.426	0.205	0.289	0.121
	N	75	75	70	75	49	75	65	75	30	75	42

Spearman's rho		Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
Diffenrentiating emotions	Correlation Coefficient	0.08	0.223	0.31	0.018	0.415	0.174	0.067	0.058	-0.019	0.054
	p-value	0.498	0.062	0.007	0.883	0.001	0.162	0.57	0.631	0.874	0.683
	N	75	71	75	72	75	66	75	71	75	59
Verbal Sharing of Emotions	Correlation Coefficient	0.063	0.271	0.021	-0.122	0.159	0.079	0.001	-0.029	-0.074	-0.191
	p-value	0.593	0.022	0.856	0.309	0.174	0.526	0.991	0.808	0.529	0.146
	N	75	71	75	72	75	66	75	71	75	59
Acting out	Correlation Coefficient	0.201	0.084	0.322	0.224	0.191	0.061	0.214	0.069	0.243	-0.012
	p-value	0.083	0.488	0.005	0.058	0.1	0.627	0.065	0.565	0.036	0.929
Bodily Awareness	N	75	71	75	72	75	66	75	71	75	59
	Correlation Coefficient	0.171	0.259	-0.003	0.086	0.167	-0.068	-0.009	-0.074	0.022	-0.117
	p-value	0.143	0.029	0.976	0.472	0.151	0.589	0.939	0.541	0.855	0.378
Attending to Others	N	75	71	75	72	75	66	75	71	75	59
	Correlation Coefficient	0.216	0.378	0.197	0.036	0.068	0.054	0.106	0.077	0.031	-0.086
	p-value	0.063	0.001	0.091	0.766	0.564	0.666	0.364	0.525	0.79	0.518
	N	75	71	75	72	75	66	75	71	75	59
Analysis of emotions	Correlation Coefficient	0.251	0.326	0.391	0.337	0.105	0.169	0.246	0.156	0.129	0.207
	p-value	0.03	0.006	0.001	0.004	0.371	0.176	0.033	0.194	0.271	0.116
	N	75	71	75	72	75	66	75	71	75	59

Figure 23.0: Relationship between different categories of emotional awareness and level of depression






CDI
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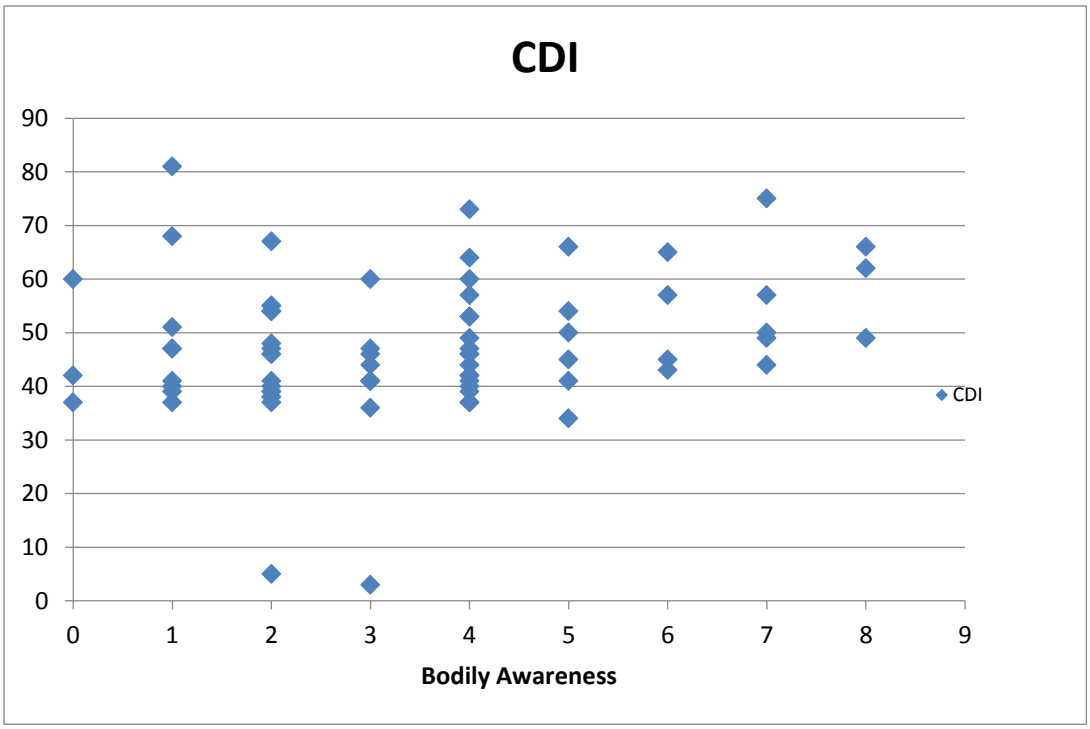
10
12
Acting out
CDI


CDI
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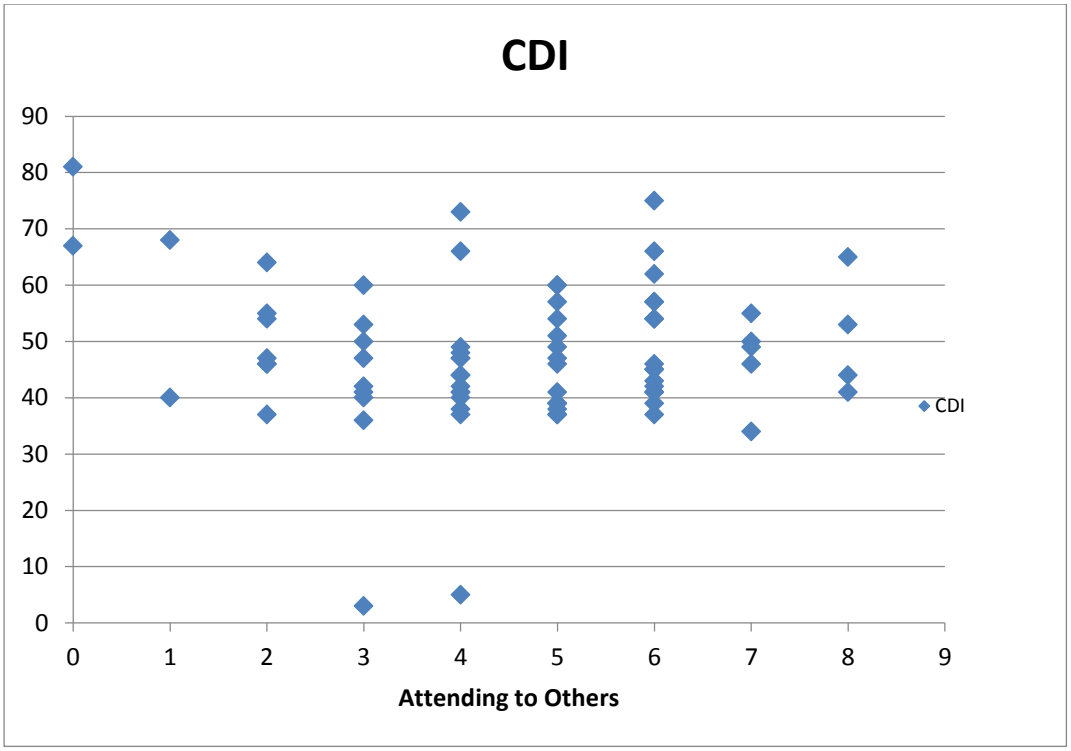
8
9
Bodily Awareness
CDI


CDI
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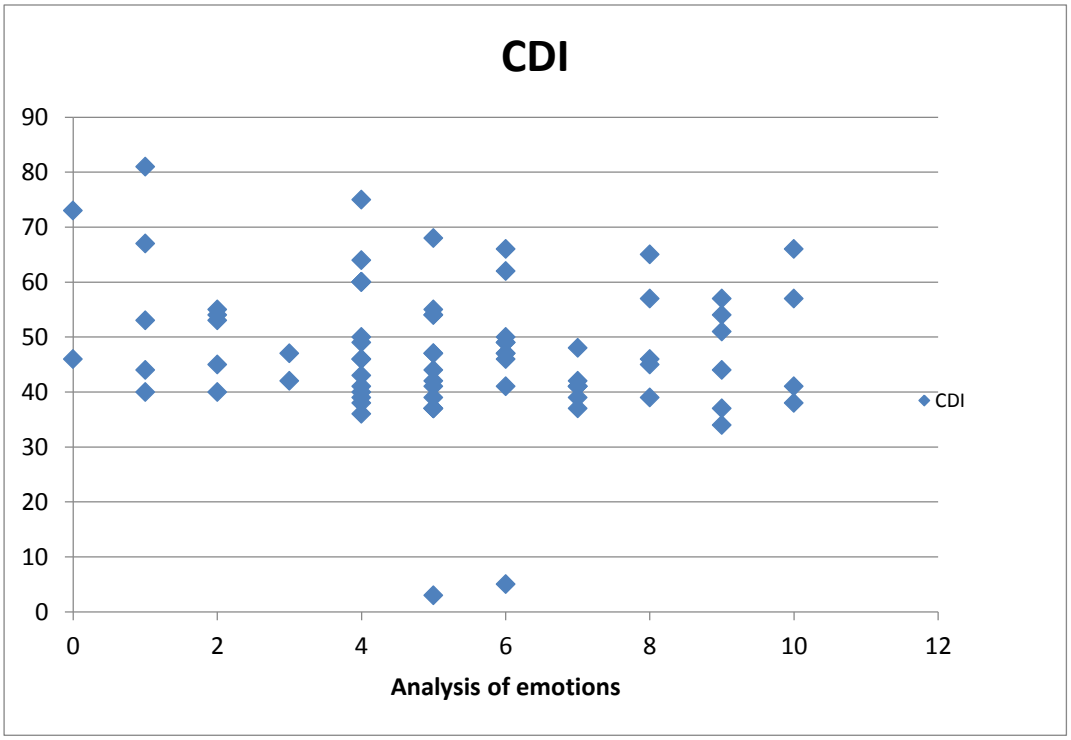
9
Attending to Others
CDI


CDI
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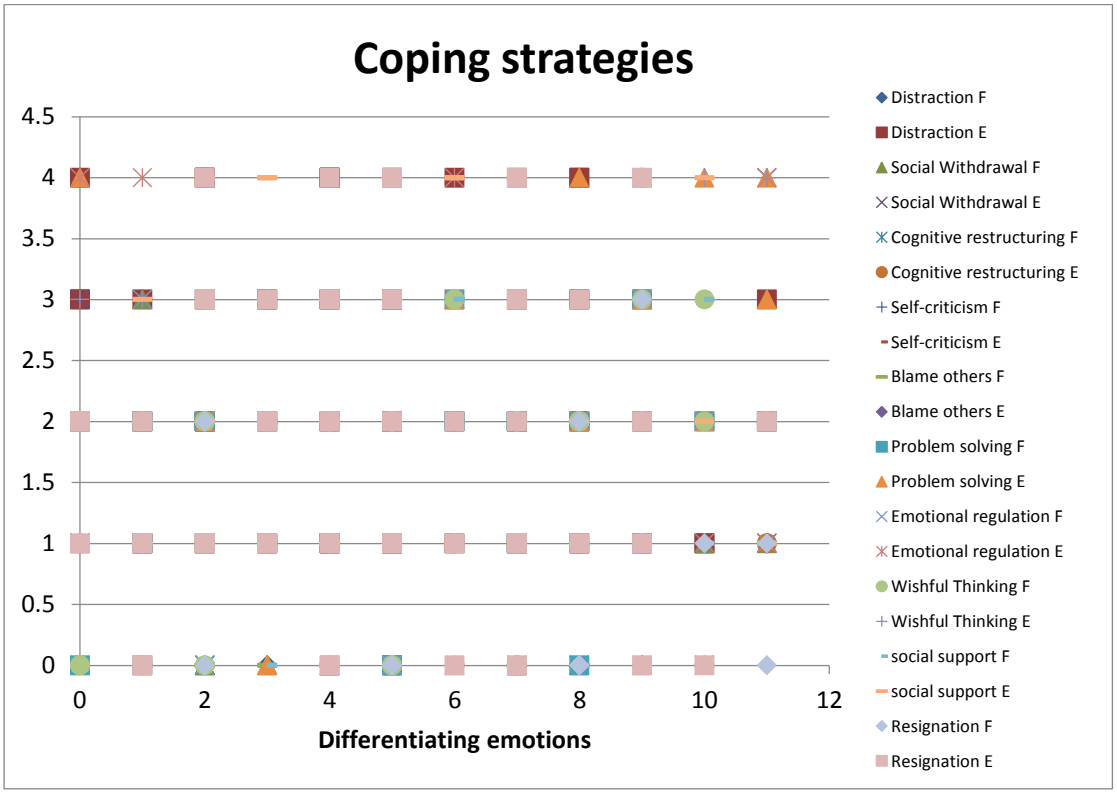
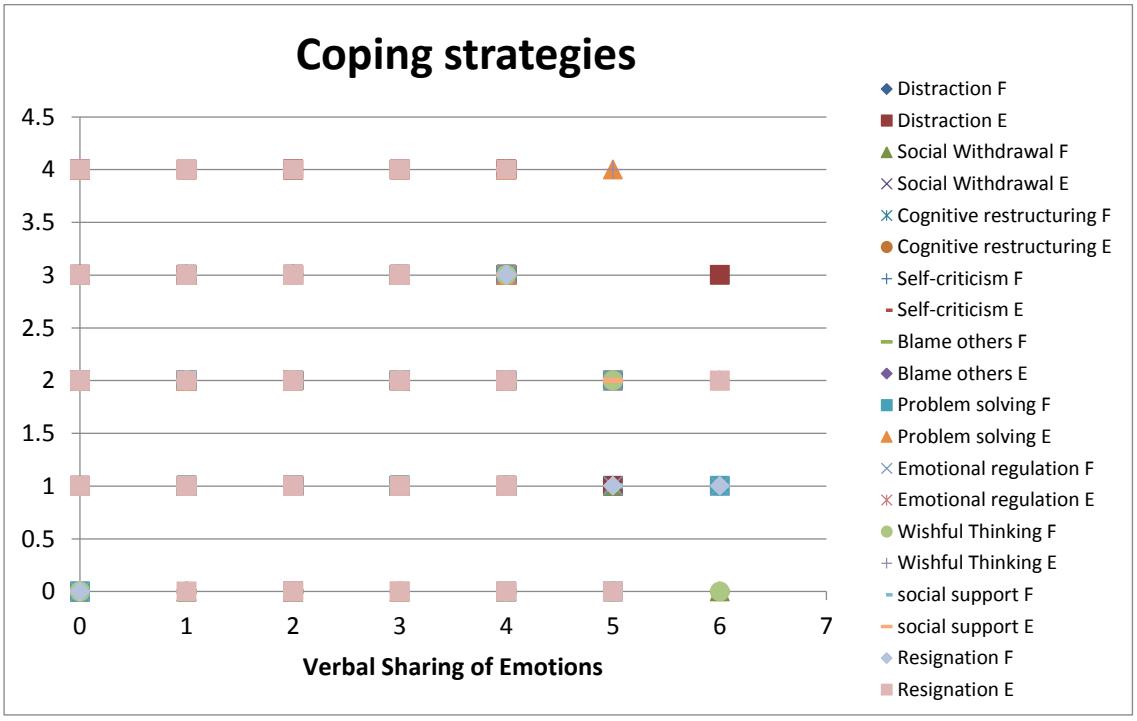
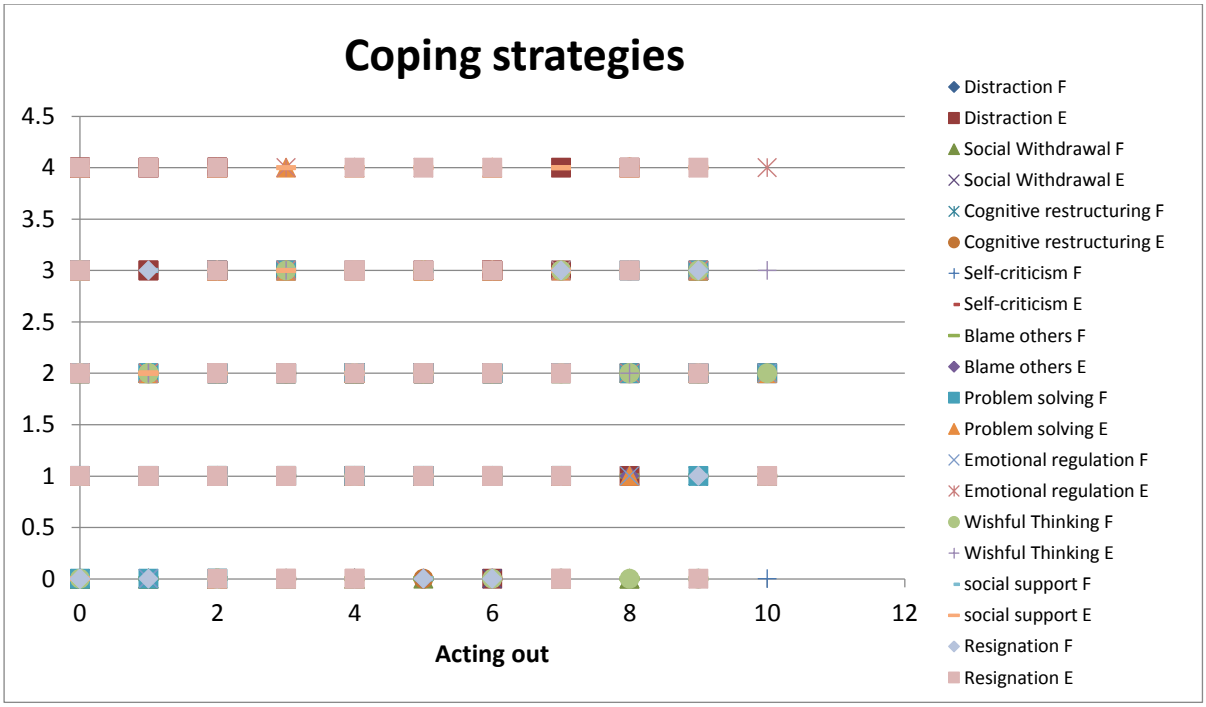
Analysis of emotions
CDI

Figure 23.1: Relationship between different categories of emotional awareness and coping strategies



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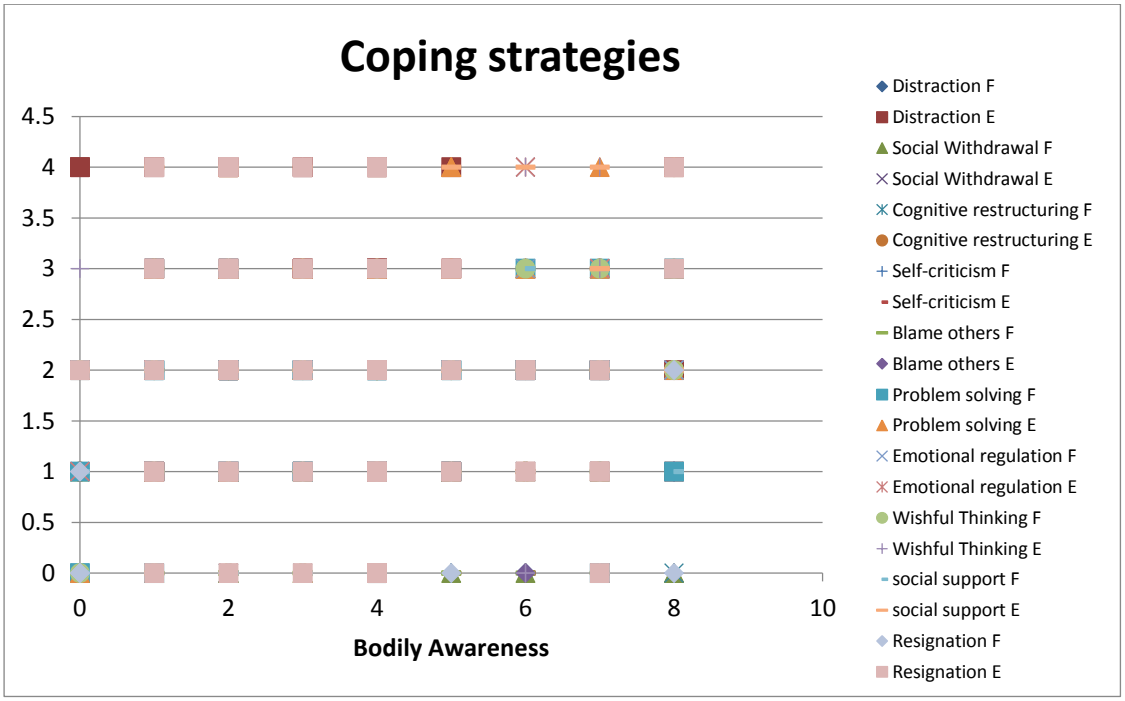
12
Acting out
Distraction F
Distraction E
Social Withdrawal F
Social Withdrawal E
Cognitive restructuring F
Cognitive restructuring E
Self-criticism F
Self-criticism E
Blame others F
Blame others E
Problem solving F
Problem solving E
Emotional regulation F
Emotional regulation E
Wishful Thinking F
Wishful Thinking E
social support F
social support E
Resignation F
Resignation E


Coping strategies
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Bodily Awareness
Distraction F
Distraction E
Social Withdrawal F
Social Withdrawal E
Cognitive restructuring F
Cognitive restructuring E
Self-criticism F
Self-criticism E
Blame others F
Blame others E
Problem solving F
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Emotional regulation F
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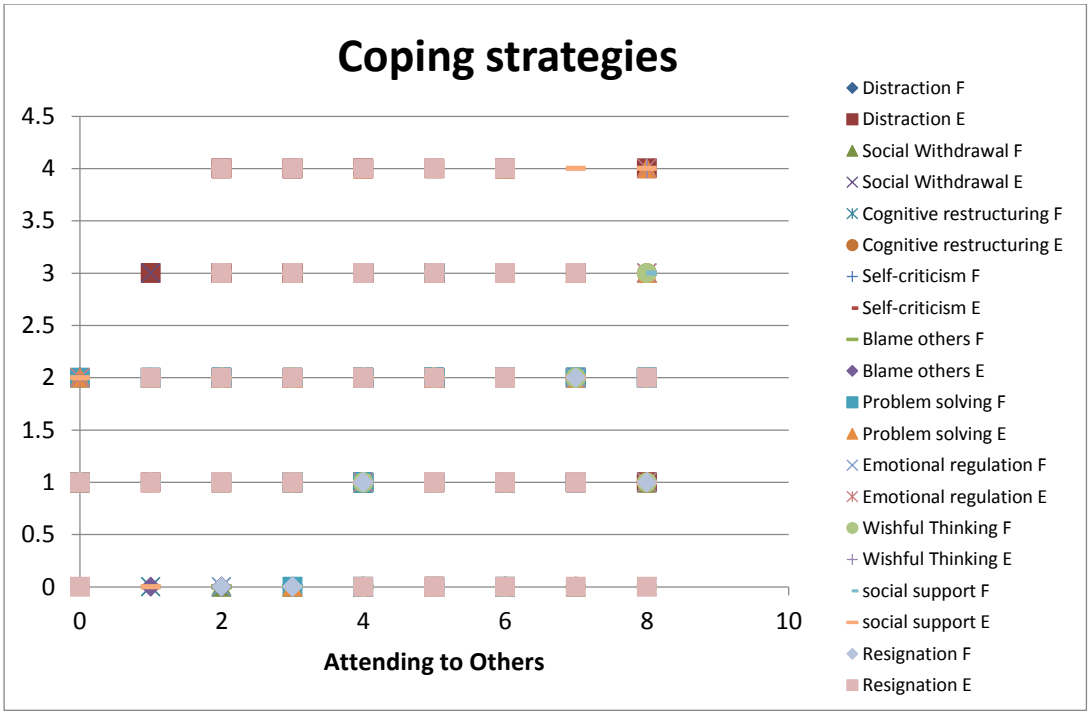
social support F
social support E
Resignation F
Resignation E


Coping strategies
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Attending to Others
Distraction F
Distraction E
Social Withdrawal F
Social Withdrawal E
Cognitive restructuring F
Cognitive restructuring E
Self-criticism F
Self-criticism E
Blame others F
Blame others E
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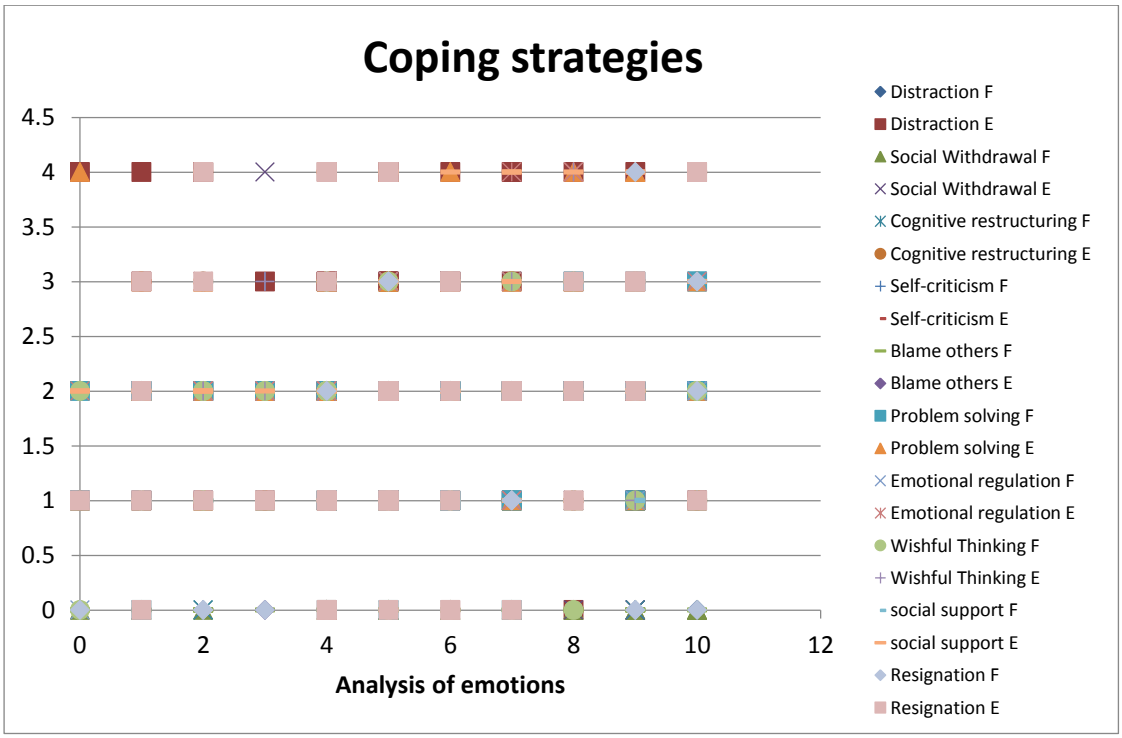
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12
Analysis of emotions
Distraction F
Distraction E
Social Withdrawal F
Social Withdrawal E
Cognitive restructuring F
Cognitive restructuring E
Self-criticism F
Self-criticism E
Blame others F
Blame others E
Problem solving F
Problem solving E
Emotional regulation F
Emotional regulation E
Wishful Thinking F
Wishful Thinking E
social support F
social support E
Resignation F
Resignation E

Table 24: Relationship between general health and behavioural issues

Spearman's rho		Internalizing	Attention	Externalizing	Total
GHQ-12	Correlation Coefficient	0.180	0.138	0.240	0.285
	p-value	0.123	0.236	0.038	0.013
	N	75	75	75	75

Figure 24: Relationship between general health and behavioural issues

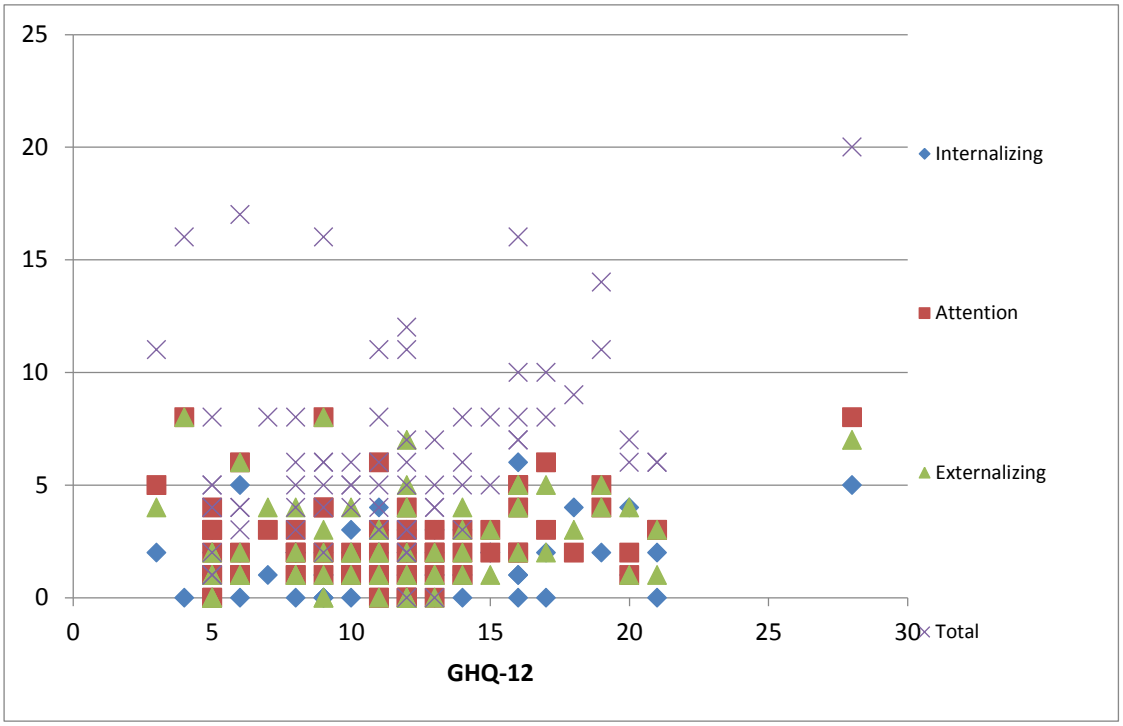


Table 25: Relationship between general health and family functioning

Spearman's rho		Physical	Emotional	Social	Cognitive	Communication	Worry	Daily Activity	Family Relationships	TOTAL SCORES	PARENTS HRQL SUMMARY	FAMILY FUNCTIONING SUMMARY SCORES
GHQ-12	Correlation Coefficient	-0.240	-0.219	-0.097	-0.200	-0.053	0.102	-0.014	-0.188	-0.127	-0.127	-0.127
	p-value	0.038	0.059	0.408	0.086	0.654	0.386	0.905	0.106	0.277	0.277	0.277
	N	75	75	75	75	75	75	75	75	75	75	75

Figure 25: Relationship between general health and behavioural issues

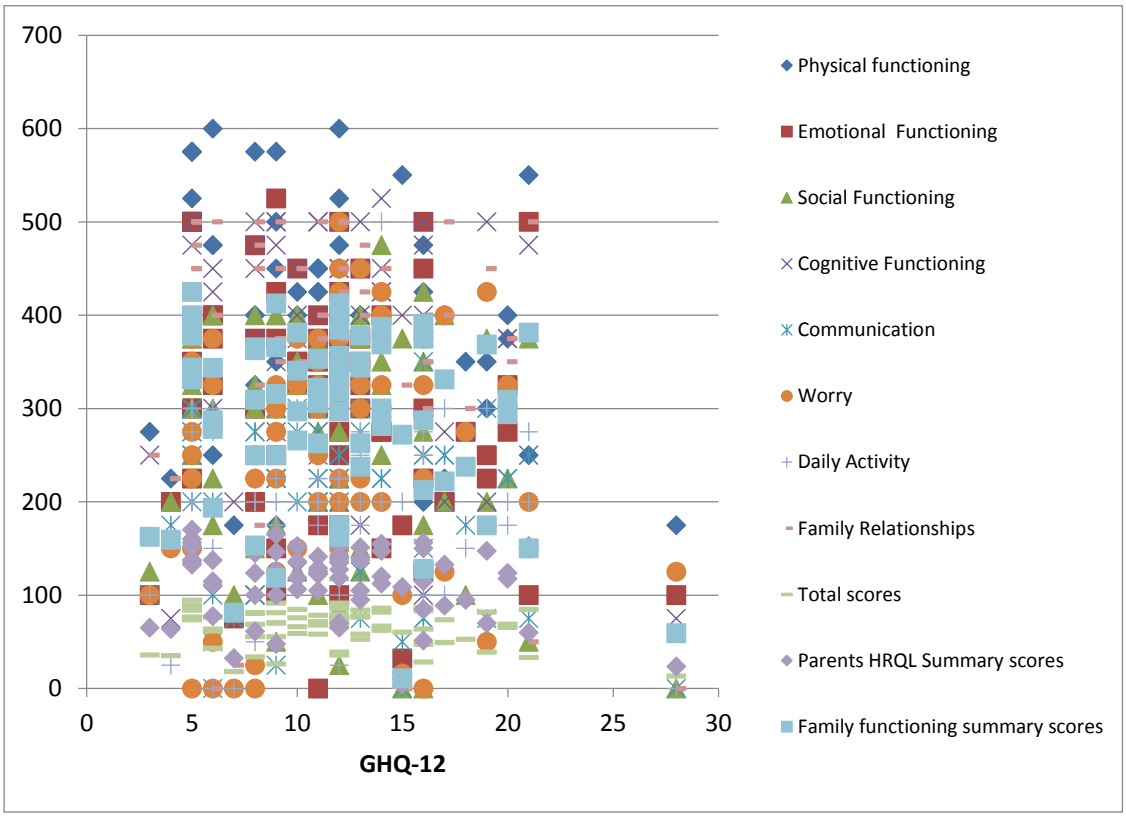
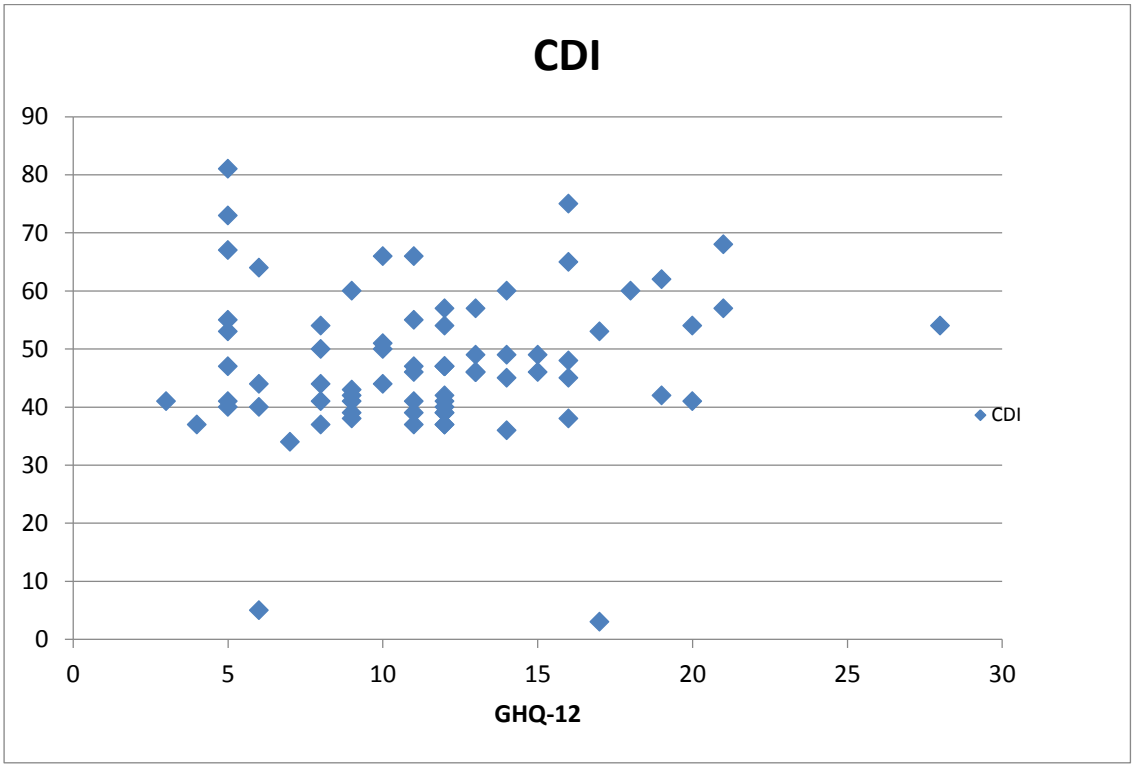


Table 26: Relationship between general health, level of depression and coping strategies

Spearman's rho		CDI	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
GHQ-12	Correlation Coefficient	0.154	0.124	0.085	-0.118	-0.033	-0.090	0.008	0.096	0.017	0.205	0.071	-0.106	-0.080	0.223	0.003	0.293	0.083	-0.017	-0.030	0.137	-0.052
	p-value	0.187	0.291	0.483	0.314	0.821	0.441	0.952	0.412	0.930	0.078	0.653	0.366	0.508	0.054	0.980	0.011	0.507	0.883	0.801	0.240	0.697
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59

Figure 26: Relationship between general health, level of depression and coping strategies



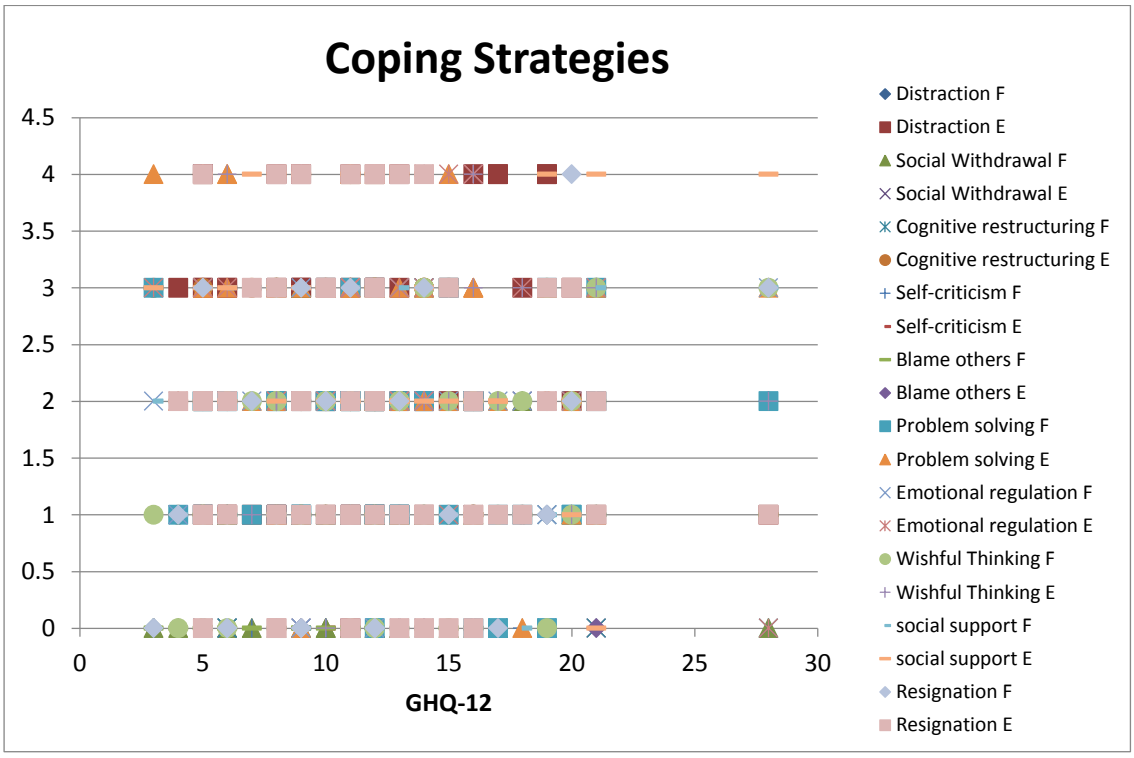


Table 27: Relationship among different behaviour issues

Spearman's rho		Attention	Externalizing	Total
Internalizing	Correlation Coefficient	0.176	0.172	0.513
	p-value	0.131	0.140	0.000
	N	75	75	75
Attention	Correlation Coefficient		0.392	0.748
	p-value		0.001	0.000
	N		75	75
Externalizing	Correlation Coefficient			0.781
	p-value			0.000
	N			75
Total	Correlation Coefficient			
	p-value			
	N			

Table 28: Relationship between behaviour issues and family functioning

Spearman's rho		Attention	Externalizing	TOTAL	Physical	Emotional	Social	Cognitive	Communication	Worry	Daily Activity	FAMILY FUNCTIONING	TOTAL SCORES	PARENTS HRQL SUMMARY	FAMILY FUNCTIONING SUMMARY SCORES
Internalizing	Correlation Coefficient	0.176	0.172	0.513	-0.280	-0.292	-0.287	-0.198	-0.287	-0.190	-0.195	-0.146	-0.308	-0.308	-0.308
	p-value	0.131	0.140	0.001	0.015	0.011	0.012	0.089	0.013	0.102	0.094	0.213	0.007	0.007	0.007
	N	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Attention	Correlation Coefficient		0.392	0.748	-0.390	-0.385	-0.368	-0.423	-0.447	-0.339	-0.350	-0.345	-0.479	-0.479	-0.479
	p-value		0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.003	0.002	0.002	0.001	0.001	0.001
	N		75	75	75	75	75	75	75	75	75	75	75	75	75
Externalizing	Correlation Coefficient			0.781	-0.310	-0.350	-0.253	-0.260	-0.191	-0.130	-0.139	-0.295	-0.301	-0.301	-0.301
	p-value			0.001	0.007	0.002	0.029	0.025	0.101	0.267	0.233	0.010	0.009	0.009	0.009
	N			75	75	75	75	75	75	75	75	75	75	75	75
TOTAL	Correlation Coefficient				-0.462	-0.498	-0.401	-0.404	-0.374	-0.263	-0.283	-0.338	-0.481	-0.481	-0.481
	p-value				0.001	0.001	0.001	0.001	0.001	0.023	0.014	0.003	0.001	0.001	0.001
	N				75	75	75	75	75	75	75	75	75	75	75

Figure 27: Relationship between behaviour issues and family functioning

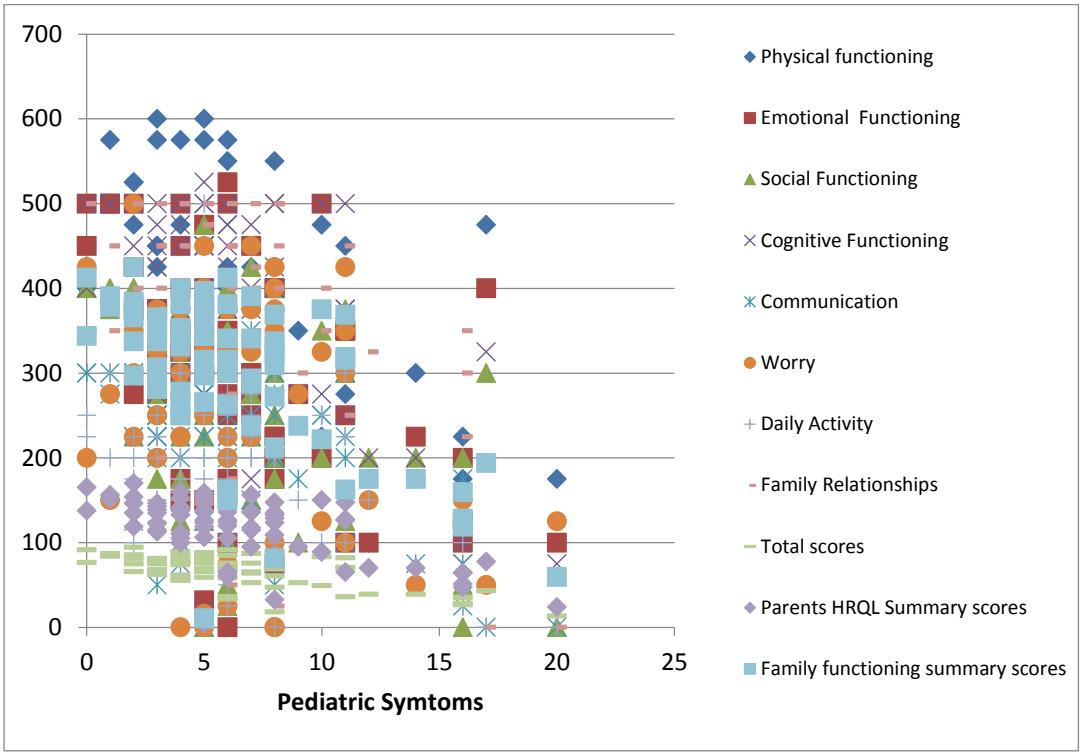
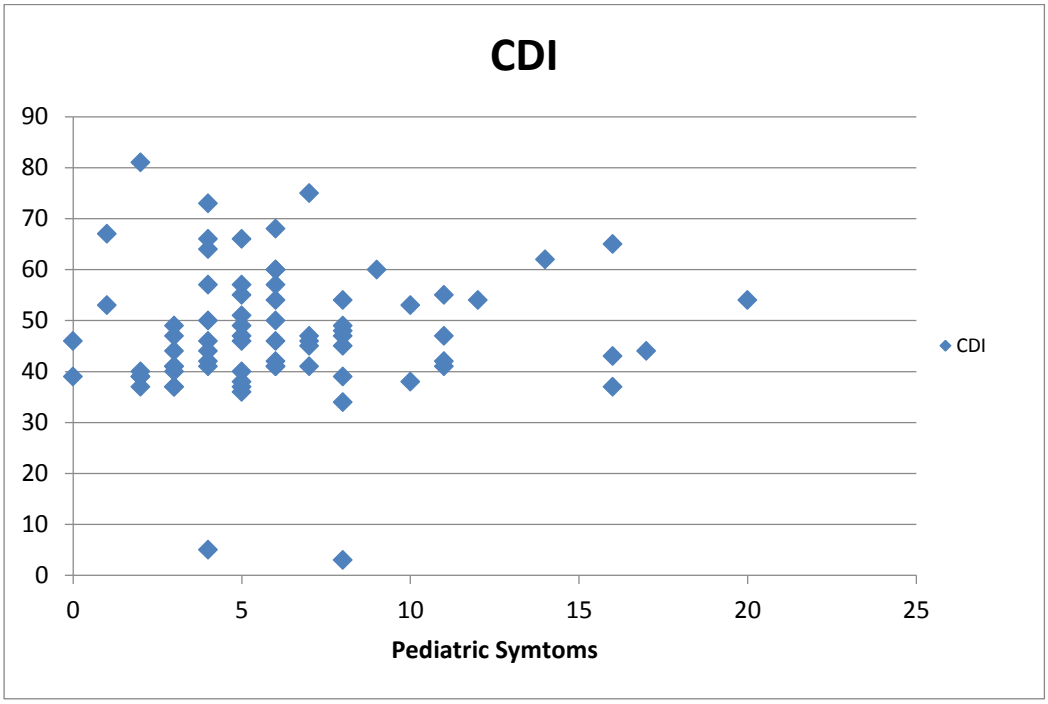


Table 29: Relationship between behaviour issues, level of depression and coping mechanism

Spearman's rho		CDI	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
Internalizing	Correlation Coefficient	0.292	0.096	-0.152	0.018	0.089	-0.068	0.027	0.105	0.103	0.117	0.256	0.201	0.078	0.077	-0.128	0.258	0.250	-0.022	-0.095	0.056	0.096
	p-value	0.011	0.412	0.208	0.875	0.542	0.564	0.828	0.370	0.586	0.317	0.102	0.084	0.517	0.510	0.284	0.025	0.043	0.851	0.430	0.633	0.472
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Attention	Correlation Coefficient	-0.066	0.032	0.204	-0.074	0.345	-0.219	-0.026	0.011	-0.207	-0.081	0.155	-0.053	-0.065	0.092	-0.126	-0.048	0.027	-0.100	-0.058	-0.157	-0.067
	p-value	0.576	0.782	0.091	0.525	0.015	0.059	0.838	0.926	0.272	0.492	0.328	0.651	0.588	0.434	0.293	0.683	0.831	0.392	0.633	0.178	0.616
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Externalizing	Correlation Coefficient	0.103	0.026	0.077	-0.134	-0.133	-0.200	-0.274	-0.015	-0.173	0.109	0.161	0.091	0.227	-0.094	-0.135	0.186	0.059	-0.033	-0.155	0.063	-0.169
	p-value	0.381	0.822	0.526	0.253	0.361	0.085	0.027	0.901	0.360	0.353	0.307	0.436	0.057	0.421	0.258	0.111	0.636	0.777	0.197	0.591	0.201
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
TotAL	Correlation Coefficient	0.124	0.083	0.095	-0.084	0.109	-0.222	-0.173	0.019	-0.230	0.076	0.188	0.058	0.038	0.019	-0.226	0.152	0.094	-0.098	-0.175	-0.026	-0.110
	p-value	0.289	0.480	0.435	0.473	0.457	0.056	0.167	0.873	0.222	0.517	0.234	0.624	0.751	0.870	0.057	0.193	0.451	0.404	0.143	0.827	0.408
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59

Figure 28: Relationship between behaviour issues, level of depression and coping mechanism



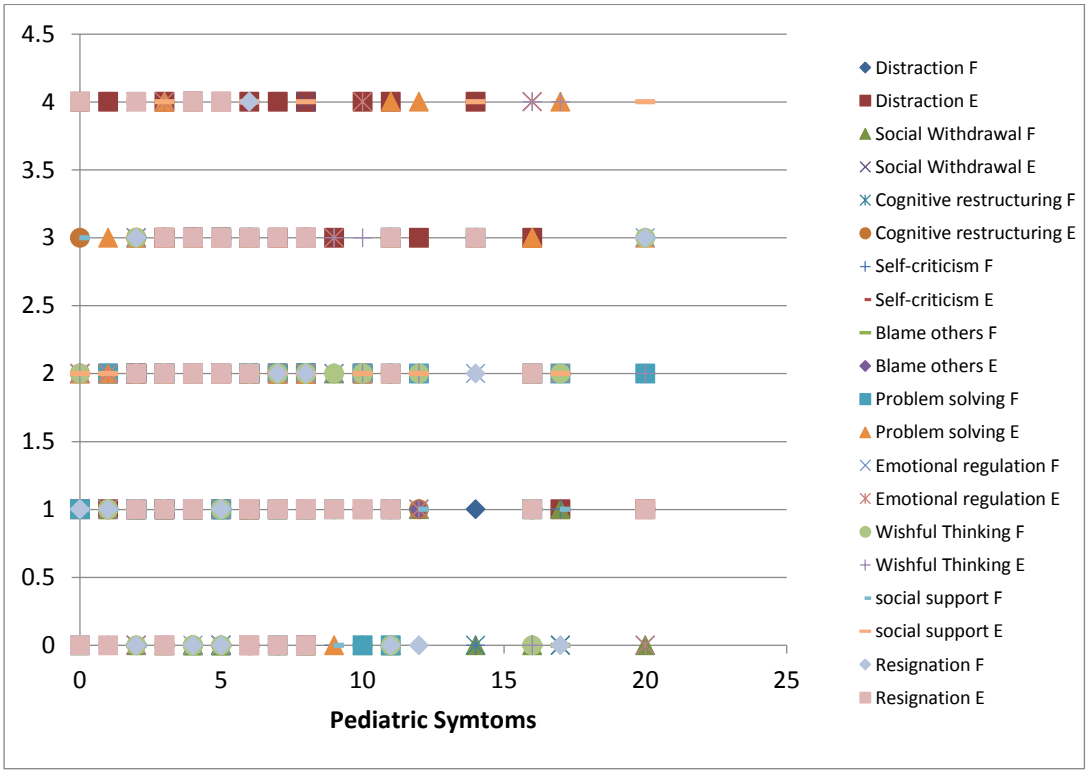
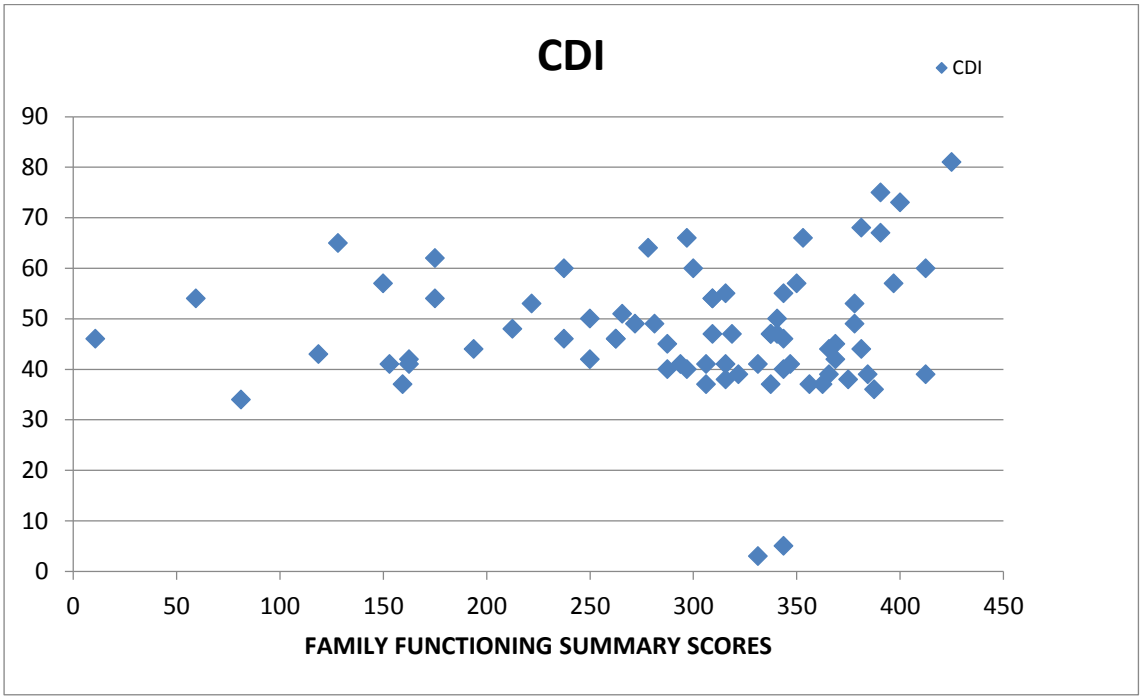


Table 30: Relationship between family functioning, level of depression and coping mechanism

Spearman's rho		CDI	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
Physical	Correlation Coefficient	-0.015	-0.122	-0.115	0.045	-0.177	-0.140	-0.127	-0.115	-0.044	-0.026	-0.190	-0.006	-0.024	-0.164	-0.009	-0.132	-0.061	-0.114	-0.068	-0.035	-0.054
	p-value	0.899	0.297	0.342	0.700	0.224	0.232	0.313	0.328	0.816	0.827	0.228	0.962	0.840	0.161	0.942	0.258	0.626	0.329	0.574	0.769	0.684
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Emotional	Correlation Coefficient	0.021	-0.166	-0.083	0.056	-0.187	-0.052	-0.043	-0.054	-0.192	0.041	-0.039	-0.145	-0.154	-0.267	-0.008	-0.251	-0.180	-0.185	-0.132	-0.140	-0.124
	p-value	0.859	0.155	0.495	0.635	0.197	0.656	0.736	0.647	0.308	0.726	0.807	0.214	0.200	0.020	0.944	0.030	0.149	0.112	0.273	0.231	0.350
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Social	Correlation Coefficient	0.023	-0.091	0.150	0.022	-0.138	0.071	-0.072	-0.117	0.183	0.003	-0.136	-0.225	-0.191	-0.180	-0.090	-0.194	-0.101	-0.041	-0.038	-0.063	0.053
	p-value	0.846	0.436	0.216	0.854	0.343	0.543	0.569	0.317	0.333	0.980	0.389	0.052	0.111	0.122	0.450	0.096	0.420	0.727	0.753	0.591	0.688
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Cognitive	Correlation Coefficient	0.142	-0.089	-0.097	0.131	0.016	0.064	-0.156	0.001	0.149	-0.011	-0.359	0.007	-0.198	-0.147	0.031	-0.030	-0.034	-0.014	0.019	0.068	0.061
	p-value	0.224	0.447	0.424	0.264	0.913	0.587	0.214	0.992	0.431	0.927	0.020	0.949	0.097	0.209	0.795	0.801	0.787	0.907	0.876	0.562	0.647
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Communication	Correlation Coefficient	0.100	-0.098	0.070	0.096	0.052	0.113	-0.002	-0.074	0.007	-0.020	-0.239	-0.192	-0.195	-0.195	-0.001	-0.176	-0.065	-0.088	-0.005	0.018	0.111
	p-value	0.392	0.404	0.567	0.414	0.723	0.333	0.990	0.527	0.971	0.863	0.127	0.098	0.104	0.094	0.996	0.131	0.604	0.455	0.968	0.880	0.401
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Worry	Correlation Coefficient	-0.202	0.020	0.089	-0.038	-0.030	0.165	0.222	-0.116	-0.271	0.038	-0.071	-0.280	-0.207	-0.102	0.105	-0.121	-0.034	-0.024	-0.008	0.024	0.130
	p-value	0.083	0.868	0.464	0.747	0.838	0.157	0.075	0.321	0.148	0.747	0.653	0.015	0.083	0.386	0.381	0.301	0.785	0.836	0.950	0.837	0.325
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Daily Activity	Correlation Coefficient	0.060	0.015	0.073	0.149	-0.103	-0.030	0.038	-0.095	0.062	0.070	-0.158	-0.017	-0.085	-0.307	-0.119	-0.153	-0.089	-0.157	-0.177	-0.051	-0.016
	p-value	0.609	0.895	0.547	0.202	0.483	0.797	0.764	0.416	0.744	0.551	0.319	0.888	0.481	0.007	0.319	0.190	0.477	0.177	0.139	0.666	0.906
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Family Relationships	Correlation Coefficient	0.011	0.078	0.154	0.143	0.138	0.018	-0.021	0.017	-0.039	-0.007	-0.367	-0.104	-0.121	-0.116	0.020	-0.270	-0.210	-0.058	-0.082	0.005	0.099
	p-value	0.924	0.508	0.202	0.221	0.343	0.875	0.870	0.882	0.837	0.953	0.017	0.374	0.317	0.322	0.866	0.019	0.091	0.624	0.496	0.965	0.457
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
TOTAL SCORES	Correlation Coefficient	0.030	-0.122	-0.014	0.086	-0.049	0.057	0.005	-0.037	-0.057	0.023	-0.222	-0.137	-0.174	-0.209	0.042	-0.221	-0.154	-0.095	-0.045	-0.004	0.069
	p-value	0.799	0.296	0.910	0.461	0.740	0.629	0.972	0.754	0.766	0.847	0.157	0.242	0.146	0.072	0.729	0.057	0.217	0.419	0.706	0.973	0.603
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
PARENTS HRQL SUMMARY	Correlation Coefficient	0.030	-0.122	-0.014	0.086	-0.049	0.057	0.005	-0.037	-0.057	0.023	-0.222	-0.137	-0.174	-0.209	0.042	-0.221	-0.154	-0.095	-0.045	-0.004	0.069
	p-value	0.799	0.296	0.910	0.461	0.740	0.629	0.972	0.754	0.766	0.847	0.157	0.242	0.146	0.072	0.729	0.057	0.217	0.419	0.706	0.973	0.603
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
FAMILY FUNCTIONING SUMMARY SCORES	Correlation Coefficient	0.030	-0.122	-0.014	0.086	-0.049	0.057	0.005	-0.037	-0.057	0.023	-0.222	-0.137	-0.174	-0.209	0.042	-0.221	-0.154	-0.095	-0.045	-0.004	0.069
	p-value	0.799	0.296	0.910	0.461	0.740	0.629	0.972	0.754	0.766	0.847	0.157	0.242	0.146	0.072	0.729	0.057	0.217	0.419	0.706	0.973	0.603
	N	75	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59

Figure 29: Relationship between family dynamics, level of depression and coping mechanism



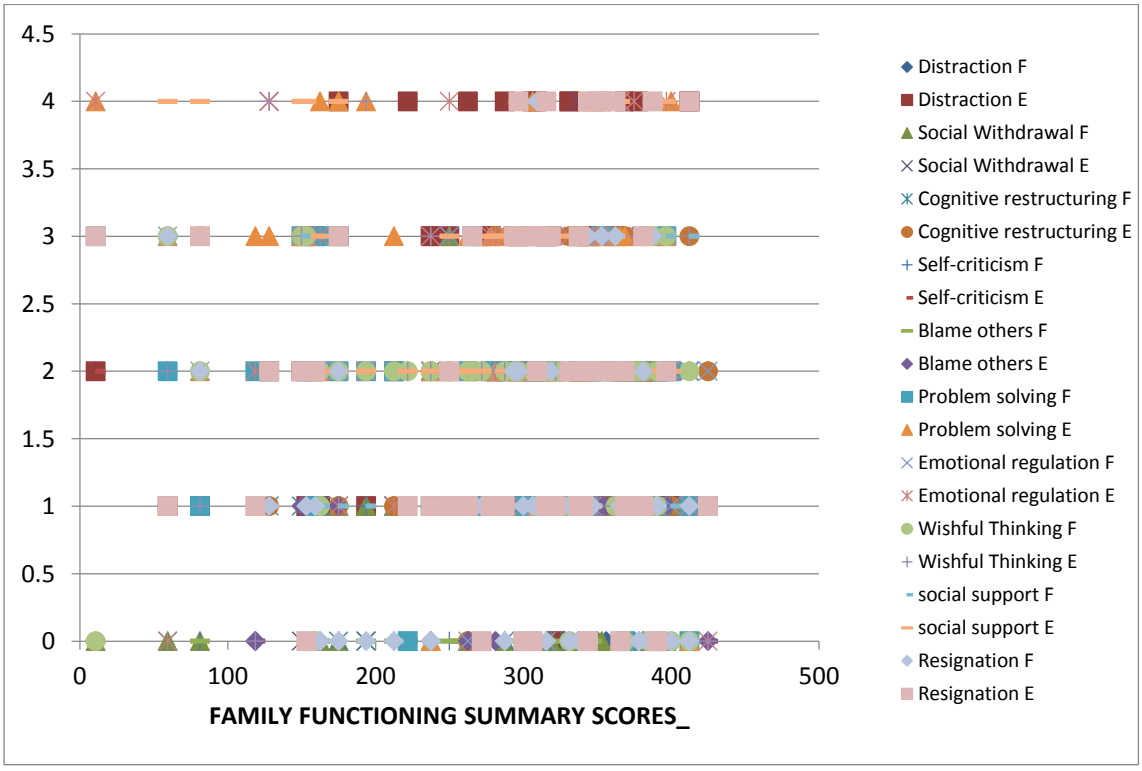


Table 31: Relationship between level of depression and coping mechanism

Spearman's rho		Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
CDI	Correlation Coefficient	0.148	-0.163	0.044	0.112	-0.054	-0.244	0.143	-0.095	0.247	0.010	0.169	0.038	0.074	-0.161	0.136	-0.121	0.011	-0.032	0.098	-0.211
	p-value	0.205	0.177	0.708	0.444	0.647	0.050	0.222	0.619	0.032	0.948	0.147	0.750	0.527	0.177	0.243	0.333	0.927	0.794	0.402	0.109
	N	75	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59

Figure 30: Relationship between level of depression and coping mechanism

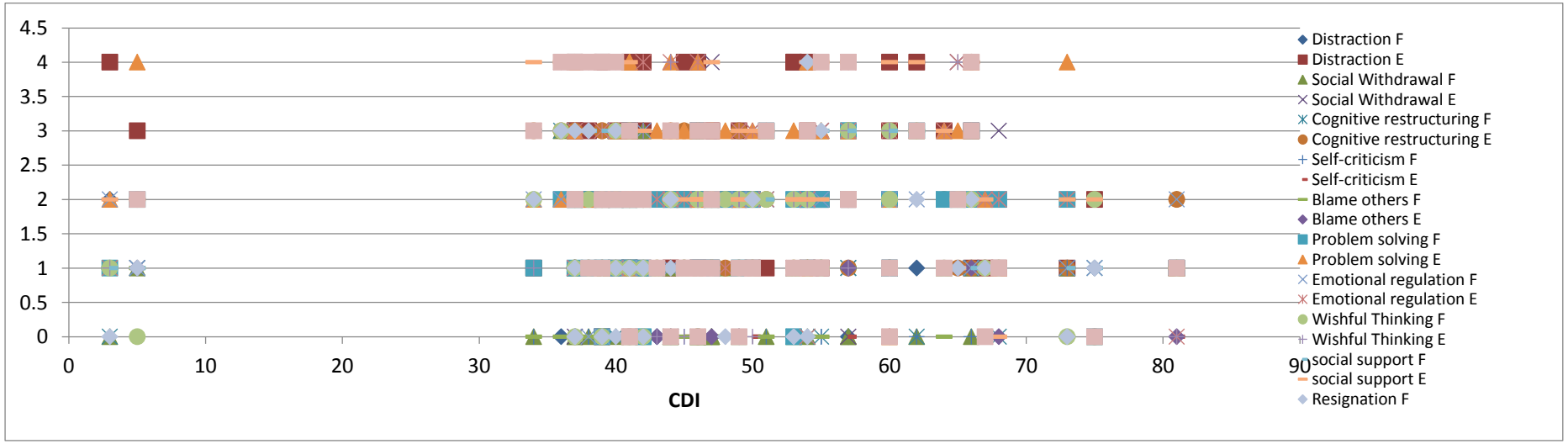


Table 32: Relationship among various domains of coping startegies

Spearman's rho		Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Baming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
Distraction F	Correlation Coefficient	0.414	-0.136	-0.122	-0.057	-0.003	-0.079	0.006	0.036	0.017	-0.098	-0.088	0.115	0.017	0.024	0.102	0.01	0.024	0.079	0.035
	p-value	0.001	0.245	0.404	0.628	0.979	0.502	0.974	0.759	0.916	0.402	0.465	0.327	0.886	0.836	0.416	0.935	0.844	0.503	0.794
	N	70	75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Distraction E	Correlation Coefficient	1	-0.16	0.188	0.049	-0.06	-0.274	0.078	-0.167	0.157	-0.331	-0.133	-0.245	0.016	-0.271	0.06	-0.087	0.035	-0.051	0.304
	p-value		0.187	0.211	0.689	0.646	0.022	0.707	0.168	0.34	0.005	0.286	0.041	0.896	0.023	0.643	0.474	0.783	0.677	0.024
	N		70	46	70	60	70	26	70	39	70	66	70	67	70	61	70	66	70	55
Social Withdrawal F	Correlation Coefficient		1	0.382	-0.029	-0.032	0.143	-0.149	0.095	-0.147	0.118	-0.087	0.079	0.056	0.002	0.046	-0.044	-0.177	0.009	-0.158
	p-value		.	0.007	0.805	0.799	0.22	0.433	0.418	0.351	0.312	0.47	0.5	0.64	0.988	0.712	0.711	0.14	0.939	0.233
	N		75	49	75	65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Social Withdrawal E	Correlation Coefficient		0.382	1	0.218	0.209	0.106	-0.151	-0.106	0.179	-0.124	-0.222	-0.059	0.089	-0.083	0.022	0.028	0.002	0.175	0.236
	p-value			.	0.132	0.174	0.47	0.49	0.47	0.336	0.396	0.125	0.685	0.55	0.572	0.887	0.847	0.988	0.23	0.155
	N			49	49	44	49	23	49	31	49	49	49	48	49	44	49	45	49	38
Cognitive restructuring F	Correlation Coefficient			0.218	1	0.636	0.254	0.322	-0.154	0.132	0.043	0.108	0.219	0.465	-0.124	0.033	0.392	0.333	0.294	0.344
	p-value					0.001	0.028	0.083	0.187	0.405	0.715	0.37	0.059	0.001	0.291	0.791	0.001	0.005	0.01	0.008
	N					65	75	30	75	42	75	71	75	72	75	66	75	71	75	59
Cognitive restructuirng E	Correlation Coefficient					1	0.253	0.296	-0.166	0.17	0.033	0.059	0.247	0.462	-0.099	-0.065	0.544	0.581	0.346	0.471
	p-value					.	0.042	0.134	0.187	0.321	0.796	0.65	0.047	0.001	0.434	0.636	0.001	0.001	0.005	0.001
	N					65	65	27	65	36	65	62	65	62	65	56	65	61	65	52
Self-criticism F	Correlation Coefficient					0.253	1	0.494	0.203	0.125	0.263	0.101	0.381	0.221	0.101	0.152	0.297	0.178	0.293	0.095
	p-value							0.006	0.081	0.429	0.022	0.401	0.001	0.063	0.387	0.222	0.01	0.138	0.011	0.473
	N							30	75	42	75	71	75	72	75	66	75	71	75	59
Self-criticism E	Correlation Coefficient							1	-0.007	0.275	0.317	0.433	0.282	0.386	0.217	0.391	0.429	0.509	0.345	0.489
	p-value							.	0.97	0.241	0.088	0.017	0.131	0.035	0.249	0.044	0.018	0.005	0.062	0.011
	N							30	30	20	30	30	30	30	30	27	30	29	30	26
Blaming others F	Correlation Coefficient							-0.007	1	0.345	0.23	-0.02	0.308	0.057	0.309	0.079	0.104	-0.018	0.161	-0.202
	p-value									0.025	0.047	0.866	0.007	0.637	0.007	0.526	0.375	0.883	0.167	0.126
	N									42	75	71	75	72	75	66	75	71	75	59
Blaming others E	Correlation Coefficient									1	0.105	0.155	0	0.084	0.188	0.153	0.285	0.248	0.302	0.396
	p-value									.	0.509	0.325	0.999	0.597	0.233	0.345	0.068	0.123	0.052	0.019
	N									42	42	42	42	42	42	40	42	40	42	35
Problem solving F	Correlation Coefficient									0.105	1	0.66	0.253	0.14	0.179	0.041	0.247	0.136	0.142	0.034
	p-value										.	0.001	0.029	0.241	0.124	0.741	0.033	0.26	0.226	0.797
	N									42	75	71	75	72	75	66	75	71	75	59
Problem solving E	Correlation Coefficient									0.155	0.66	1	0.193	0.172	0.013	-0.04	0.218	0.203	0.056	0.131
	p-value												0.107	0.16	0.918	0.755	0.067	0.099	0.641	0.342
	N												71	68	71	64	71	67	71	55
Emotional regulation F	Correlation Coefficient												1	0.469	0.262	0.09	0.49	0.445	0.337	0.156
	p-value												.	0.001	0.023	0.475	0.001	0.001	0.003	0.238
	N												75	72	75	66	75	71	75	59
Emotional regulation E	Correlation Coefficient												0.469	1	0.053	0.234	0.519	0.488	0.426	0.468
	p-value														0.659	0.063	0.001	0.001	0.001	0.001
	N														72	64	72	69	72	57
Wishful Thinking F	Correlation Coefficient														1	0.342	0.126	0.199	0.126	-0.056
	p-value														.	0.005	0.282	0.096	0.281	0.672
	N														75	66	75	71	75	59
Wishful Thinking E	Correlation Coefficient														0.342	1	0.004	0.028	0.13	0.286
	p-value															.	0.976	0.829	0.298	0.04
	N												66	64	66	66	66	63	66	52
Social support F	Correlation Coefficient												0.49	0.519	0.126	0.004	1	0.87	0.699	0.481
	p-value																	0.001	0.001	0.001
	N																	71	75	59
Social support E	Correlation Coefficient																	1	0.541	0.471
	p-value																	.	0.001	0.001
	N																	71	71	58
Resignation F	Correlation Coefficient																	0.541	1	0.735
	p-value																			0.001
	N																			59
Resignation E	Correlation Coefficient																			1
	p-value																			.
	N																			59

RESULTS

The study was conducted at the Thalassemia Day Care Centre at Dayanand Medical College and Hospital in Ludhiana. The healthy control group was selected from local schools. A total of 225 participants, including 75 with transfusion-dependent thalassemia and 150 healthy controls, all aged between 8-16 years, were enrolled in the research. Before their participation, all individuals' parents provided written consent and completed a socio-demographic questionnaire. Participants were assessed using an emotion awareness questionnaire, general health questionnaire-12, pediatric symptom checklist, PEDSQL™ family impact module, KIDCOPE, and children's depression inventory, for both the experiment and control group. The collected data was then organized and analyzed using the SPSS software. The following results were obtained.

Table 1 represents the number of participants in different age groups in the experimental and healthy control groups. The table displays the number of instances and percentages in each age category for both groups. The average age in both groups is 12.37 years. The age group with the highest number of cases in both experimental and healthy control groups is the 16-year-old age group with 13 cases (17.3%) and 26 cases (17.3%) respectively. The 13-year-old age group had the fewest instances in both groups, with four (5.3%) in the trial group and eight (5.3%) in the group with healthy controls. The chi-square analysis yielded a value of 0.001 with a corresponding p-value of 1.000, indicating no significant difference in age distribution between the experimental and control groups. Therefore, the data demonstrates homogeneity across age groups in both groups.

Table 2 shows the gender distribution across each of the experimental and control groups. The data is separated into two categories: male and female. Each gender group has a corresponding count of cases and a percentage within the group. For both groups, the female gender has (38.7%) cases and the male gender has (61.3%) cases. The data

indicates that there is homogeneity regarding gender distribution between the experimental and control groups. Both groups have almost identical percentages of male and female participants, The chi-square test score of 0.001 indicates that there is no significant difference. As a result, the results demonstrate that the gender distribution is consistent across both groups.

Table 3 represents the distribution of participants based on the education qualifications in both the experimental and control groups. In the experimental group, 30.7% of children are currently attending high school, 32 % are in middle school, and 37.3% are in primary school. Conversely, within the control group, the majority of children, comprising 36%, are enrolled in primary school, 29.3% are in middle school, and 34.7% are in high school. The data indicates that there's uniformity in the distribution of education levels between the experimental and control groups. The percentages of participants across various education levels closely resemble each other in both groups. With a chi-square test value of 0.382, there's no notable distinction between the groups in terms of education level distribution, further supporting the notion of homogeneity. Hence, the data suggests that participants from different educational residences are equally represented across the experimental and control groups.

Table 4 shows the distribution of participants based on whether they come from urban or rural areas. There is an apparent difference in the distribution of participants across urban and rural areas between the experimental and control groups. Both categories have a greater proportion of urban participants. The experimental group has 70.7% urban participants, while the control group has a significantly higher proportion of urban participants, with 81.3% compared to the experimental group. The chi-square test result of 0.089, although not reaching conventional thresholds for statistical significance, suggests a tendency towards a difference in address distribution between the two groups.

Table 5 shows the distribution of participants based on their family type. The data reveals that participants from joint and nuclear families are equally represented in both the experimental and control groups. The percentage of participants from joint families is 48% in the experimental group and 46.7% in the control group, while the percentage of participants from nuclear families is 52% in the experimental group and 54% in the control group. The distribution of family types between the groups does not show any significant difference, which is supported by the chi-square test value of 0.080. This implies that the data is uniform with regard to family type.

Table 6 shows the number of participants based on their socio-economic status (SES) categories, comparing an experimental group to a control group. Both the experimental and control group have the highest number of participants belonging to the Upper-Middle socio-economic status (experimental: 58.7%; control: 52%) followed by Upper socio-economic status (experimental: 25.3%; control: 34.7%), Lower-Middle socio-economic status is the next most represented category (experimental: 12%; control: 5.3%), and Upper-Lower socio-economic status (experimental: 2.7%; control: 8%). With the lowest representation in the Lower SES category (experimental: 1.3%; control: 0%). While the difference in SES distribution between the groups is not statistically significant ($p<0.05$), there's a trend suggesting a difference in socioeconomic status distribution. Overall, the findings suggest a similarity in SES distribution, with slight variations between the experimental and control groups.

Table 7 provides information on treatment issues faced by children with transfusion-dependent TM. The research explores various aspects including patients' pre-transfusion hemoglobin (Hb) levels, treatment requirements, associated costs, hospital stay durations, impact on education, and time since diagnosis. On average, the annual pre-transfusion hemoglobin (Hb) level was 9.08 mg/dl, with the smallest recorded level being 7.73 mg/dl per annum. Patients needed an average of 214.21 milliliters/kg of packed cells per year, with the lowest

requirement being 6.60 ml/kg/per annum. The average treatment cost per month was 6983.33 rupees, with a low of 2000 rupees and a high of 30,000 rupees. The average hospital stay was 1.71 days per month, with a minimum of 1 day and a maximum of 4 days. The mean travel cost was 1138.51 rupees per month, with a minimum of 100 rupees and a maximum of 12,000 rupees. On average, patients missed 2.04 days of school per month due to treatment. The least amount of missed days is one, while the maximum is seven. The average time from diagnosis was 11.39 ± 3.20 years. The minimum time observed since diagnosis was 4 years, and the maximum was 16 years. The mean (SD) age of diagnosis was ± 1.16 years.

Table 8 depicts the allocation of the case and their corresponding percentage based on their time spent in the hospital by experimental group per month. Among the cases studied, the majority, comprising 50.7%, stayed in the hospital for 2 days with 38 cases falling into this category. Following closely behind, 40.0% of cases, a total of 30, stayed only for 1 day. A smaller proportion of cases, 8.0%, stayed for 3 days, amounting to 6 cases, while only 1.3% of cases, a single case, required a 4-day hospitalization. Therefore, the majority of cases stayed either 1 or 2 days per month in the hospital, with fewer cases requiring longer durations of 3 or 4 days.

Table 9 illustrates the case distribution depending on the amount of missing school days every month, as well as the percentages associated with each. Out of all of the cases evaluated, the largest proportion (58.7%) missed two school days, which amounts to 44 cases. The second most common category is 1 day of missed school, which accounts for 24.0% of cases, or 18 cases. Only 12.0% of cases, or 9 cases, missed 3 days of school. Furthermore, there were 2 cases (2.7%) that missed 4 days of school, and 1 case (1.3%) each that missed 5 and 7 days of school. Overall, the majority of cases missed either 1 or 2 days of school, and fewer cases missed more days.

Table 10 shows the comorbidities that are commonly observed in children with TM. These comorbidities provide insights into the additional health challenges that these individuals may face. The most prevalent comorbidities among transfusion-dependent TM children are liver iron overload, affecting 36 cases (48.0%), and delayed puberty, with 16 cases (21.3%). Osteopenia, with 17 cases (22.7%), hypothyroidism, and increased serum ferritin levels which are present in 14 cases (18.7%) each are also relatively common. Followed by myocardial iron overload and osteoporosis were observed in 5 cases (6.7%), Other comorbidities, although less frequent, include hepatitis C, eye fundus abnormalities, hearing loss, abnormal creatinine levels, hypocalcemia, and enlargement of the liver and spleen.

Table 11 represents the pharmacological treatments used in children with transfusion-dependent TM, including number of cases and their respective percentages. The most common pharmacological treatment used is a combination of Deferasirox (DFX) and Deferiprone (DFP), which is utilized in 33 cases (44.0%). Deferasirox (DFX) alone is the second most common treatment with 26 cases (34.7%). Combination therapies involving Deferasirox (DFX) with other agents, such as Deferoxamine (DFO), hemoglobin inducers, or Thyronorm, are also employed but to a lesser extent.

Table 12 shows a comparison of the experimental and control groups' coping techniques in terms of its frequency and efficacy. There's no substantial modification in distraction frequency was found between the two groups as per the chi-square test (p-value=0.429). Although, differences in efficacy levels were observed in the Distractions Efficacy table, they were not statistically significant, with a p-value of 0.085.

The tables compare social withdrawal coping strategies between an experimental and a control group. Significant differences were found with p-values of 0.005 and 0.001 for each group. The experimental group showed a higher frequency of social withdrawal and lower efficacy in managing it.

In comparing cognitive restructuring coping strategies, the experimental and control groups showed no difference in frequency (p-value = 0.289). However, the control group had a higher proportion of participants reporting higher effectiveness levels (p-value = 0.001).

The tables indicate that there are statistically significant differences between the experimental group and the control group in terms of self-criticism levels. The p-values for both frequency and effectiveness are 0.001. When it comes to self-criticism frequency, a higher percentage of participants in the experimental group reported lower levels of self-criticism (level 0), while a higher percentage of participants in the control group reported higher levels (levels 1, 2, and 3). Likewise, in terms of self-criticism effectiveness, a higher percentage of participants in the experimental group reported lower effectiveness (levels 0, 1, and 2), While a larger proportion of participants in the control group indicated greater efficacy (levels 3 and 4).

The experimental and control groups showed no significant distinction in terms of blaming others, as evidenced by the data found in both frequency and effectiveness tables. The p-values in both cases were 0.274 and 0.224, respectively. These results suggest that the tendencies to blame others and the effectiveness of such coping mechanisms were relatively consistent between the two groups.

There is no noticeable difference in the frequency of problem-solving between the control and experimental groups (p-value = 0.628). However, there is significant variation in the efficacy of problem resolution between the two groups (p-value = 0.015). The Chi-square test value of 14.123 confirms this difference as significant. overall, the data suggests that while the frequency of problem-solving is Similar to the other groups, the control group shows greater levels of problem-solving effectiveness.

There is no statistically significant difference between the experimental and control groups in terms of the frequency (p-value = 0.341) and

effectiveness (p-value = 0.972) of the emotional regulation coping strategy. The data suggests that emotional regulation levels are comparable between the two groups, indicating similar emotional regulation patterns in both.

The experimental and control groups have equal levels of wishful thinking (p=0.248), but there is a significant variation in its efficiency (p=0.019). Overall, group undergoing the experimentis less effective at wishful thinking.

There is no statistically significant difference between the experimental and control groups in terms of the frequency (p-value = 0.079) and effectiveness (p-value = 0.125) of seeking social support as a coping strategy. The data suggests that social support levels are comparable between the two groups, indicating similar social support patterns in both.

There is no statistically significant difference between the experimental and control groups in terms of the frequency (p-value = 0.298) and effectiveness (p-value = 0.884) of resignation coping strategy. The data indicate similar resignation patterns in both groups.

Table 13 compares the emotional awareness strategies of experimental and control groups. The experimental group scored lower in differentiating emotions (4.91 vs. 6.01), sharing emotions (2.23 vs. 2.89), acting out (3.89 vs. 5.16), bodily awareness (3.43 vs. 4.23), and attending to others (4.55 vs. 5.06) with p-values of 0.021, 0.001, 0.001, 0.007, and 0.039, respectively. Nevertheless, there was no notable distinction observed between the two groups (p-value = 0.209) when analyzing emotions. In conclusion, the group participating in the experiment scored lower on several emotional management methods than the control group.

Table 14 compares GHQ-12 scores of the experimental and control groups. The test group received considerably more points (mean=11.52, SD=4.79) than the control group (mean=7.53, SD=5.28)

indicating potentially poorer mental health outcomes. GHQ-12 scores of 11-12 are typically considered normal.

Table 15 presents a comparison of behavioral issues in children with transfusion-dependent TM and the control group. The group participating in the experiment scored higher on the Internalising subscale (mean=1.59, SD=1.41) than the control group (mean=1.23, SD=1.21). The Z-score is 1.953 with a p-value of 0.052, indicating a trend towards significance. In regards to attention, the experimental group had a lower mean score (Mean=2.40, SD=1.92) compared to the control group (Mean=2.84, SD=2.25). The Z-score is -1.253 with a p-value of 0.210, suggesting no substantial difference between the groups. For externalizing symptoms, there was a marginal difference between the groups, with the experimental group (Mean=2.33, SD=2.00) having slightly higher scores compared to the control group (Mean=2.26, SD=2.44). The Z-score is -0.960 with a p-value of 0.337, indicating no significant distinction. Regarding the total score, there was no substantial disparity observed between the experimental (Mean=6.32, SD=4.05) and control groups (Mean=6.33, SD=4.64), with a Z-score close to zero (-0.021) and a p-value of 0.983, suggesting no significant variation.

Table 16 presents a comparison of family functioning domains between parents of children with transfusion-dependent Thalassemia Major (TM) and a control group. The study found that the TM group had considerably lower mean scores in physical (387.80), emotional (306.76), social (275), cognitive (369.60), and communication (204.67) functions, in comparison to the control group (physical: 489.50, emotional: 400.17, social: 352.83, cognitive: 443.83, communication: 270). The TM group also reported significantly higher levels of worry (250.55) than the control group (462.17). Overall, the parents with children of transfusion-dependent TM had significantly lower total mean scores (65.52), and parents reported significantly lower health-related quality of life (117.94), compared to the control group (total mean scores: 87.11, parents HRQL: 156.79). Furthermore, compared to the

parents of the control group mean score of 391.98, parents of children with transfusion-dependent TM had significantly lower family functioning, as evident in their mean score of 294.85. There was a notable statistical distinction observed in both family impact and health-related quality of life between the two groups, with a significance level of p=0.001.

Table 17 presents a comparison of depression levels between the experimental and control groups. The experimental group has a significantly higher mean depression score (Mean=47.65, SD=12.56) compared to the control group (Mean=43.26, SD=10.35), with a Z-score of 2.790 and a p-value of 0.006. This indicates that individuals in the experimental group experienced more depressive symptoms on average compared to those in the control group.

Table 18 shows the relationship between age, mean pre-transfusion Hb, average requirement of transfusion, monthly treatment expenses, hospitalization duration, travel expenses, and the number of school days missed with level of Emotional Awareness, general health and behaviour issues. The mean pre-transfusion hemoglobin level in children with transfusion-dependent (TM) shows a moderate negative correlation with internalizing symptoms (correlation coefficient = -0.261, p-value = 0.024), indicating that lower hemoglobin levels are associated with higher levels of internalizing symptoms. The average requirement of hemoglobin (Hb) is positively correlated with the verbal sharing of emotions, with a correlation coefficient of 0.247, p-value (0.033). This suggests that there’s a moderate positive relationship between the average requirement of Hb and the extent to which individuals share their emotions verbally. However, the cost of treatment for children with transfusion-dependent TM correlates positively with attending to others (correlation = 0.286, p-value = 0.013), indicating that as the treatment cost increases, there's a tendency for individuals to pay more attention to others.

The time spent in the hospital by children with TM shows various correlations with their emotional and behavioral factors. There is a moderately positive correlation between the time spent in the hospital and the tendency to engage in acting out behaviors (correlation = 0.315, p-value = 0.006).

The cost of travel is positively correlated with the ability to differentiate emotions among individuals with transfusion-dependent TM. Specifically, there is a moderate positive correlation (correlation coefficient = 0.266, p-value = 0.022) between the cost of travel and the capacity to distinguish between different emotions. This suggests that individuals who incur higher travel costs may demonstrate a heightened ability to recognize and differentiate emotions compared to those with lower travel expenses. A variety of variables contribute to the amount of school days missed by children with thalassemia. Abstentism from school had a somewhat positive link (correlation coefficient = 0.243, p-value = 0.035) with the probability to engage in acting-out behaviours.

Table 19 shows the relationship between age, mean pre-transfusion Hb, average requirement of transfusion, monthly treatment expenses, hospitalization duration, travel expenses, and the number of school days missed with family functioning. There is a significant negative correlation (coefficient = -0.191) between children's age, parents' physical function, and family functioning in the past month (p-value = 0.100), indicating that older participants and parents tend to have lower physical function.

The physical function of parents in the past month demonstrates a moderate positive correlation with the mean pre-transfusion hemoglobin level in TM children (correlation coefficient = 0.281, p-value = 0.015), suggesting that better physical function in parents is associated with higher mean pre-transfusion hemoglobin levels in their children. Similarly, the social function of parents in the past month also exhibits a moderate positive correlation with the mean pre-transfusion

hemoglobin level in TM children (correlation coefficient = 0.270, p-value = 0.019), indicating that better social function in parents is associated with higher mean pre-transfusion hemoglobin levels in their children. Conversely, there's a negative correlation between the cost of treatment and parents' social function in the past month (correlation = -0.290, p-value = 0.012), parental worry in the past month (correlation = -0.239, p-value = 0.039), and family functioning in terms of family relationships in the past month (correlation = -0.268, p-value = 0.020). This suggests that as the treatment cost rises, there's a likelihood of decreased social functioning, increased parental worry, and strained family relationships.

Additionally, parents' worry in the past month shows a moderate negative correlation (correlation coefficient = -0.269, p-value = 0.020) with the number of missed school days, suggesting that higher levels of parental worry may be linked to fewer missed school days.

Table 20 shows the relationship between age, mean pre-transfusion Hb, average requirement of transfusion, monthly treatment expenses, hospitalization duration, travel expenses, and the number of school days missed with coping strategies, and depression. Age was found to have moderate to strong positive correlations with the utilization and effectiveness of coping strategies such as cognitive restructuring (coefficient = 0.266, p-value = 0.021; coefficient = 0.399, p-value = 0.001), emotional regulation efficacy (coefficient = 0.273, p-value = 0.021), social support frequency and effectiveness (coefficient = 0.551, p-value = 0.000; coefficient = 0.520, p-value = 0.001), and resignation (coefficient = 0.377, p-value = 0.001; coefficient = 0.269, p-value = 0.039). The time since diagnosis is favourably related to various coping techniques among participants.

There is a considerable positive relationship between time from diagnosis and the efficacy of cognitive restructuring (coefficient = 0.413, p-value = 0.001) and emotional regulation (coefficient = 0.265, p-value = 0.028) as coping strategies. Additionally, there’s a significant

positive correlation among time since diagnosis and both the frequency (coefficient = 0.529, p-value = 0.001) and effectiveness (coefficient = 0.436, p-value = 0.001) of social support, suggesting an increased reliance on seeking social support over time. Moreover, there is a positive correlation between the frequency of using resignation as a coping strategy and the time since diagnosis (coefficient = 0.381, p-value = 0.001).

There is a moderately negative correlation between the time spent in the hospital and the efficacy of distractions as a coping strategy (correlation = -0.246, p-value = 0.040), suggesting that longer hospital stays may hinder the effectiveness of distractions in managing emotions. Additionally, there is a strong negative correlation between the time spent in the hospital and the efficacy of self-criticism as a coping strategy (correlation = -0.426, p-value = 0.019), indicating that longer hospital stays are associated with lower levels of self-criticism among children with TM. Furthermore, blaming others as a coping strategy is negatively correlated with its efficacy (correlation coefficient = -0.346, p-value = 0.025), indicating that relying on blaming others may not be effective in reducing missed school days among children with thalassemia.

Table 21 shows the relationship between various different categories of emotional regulation with other psychological parameters such as children with TM general health, and behavior issues. Differentiating emotions among children with transfusion-dependent TM show significant correlations with various factors. There is a positive correlation between differentiating emotions and verbal sharing of emotions (correlation coefficient = 0.237, p-value = 0.041), acting out behaviors (correlation coefficient = 0.284, p-value = 0.014), bodily awareness (correlation coefficient = 0.322, p-value = 0.005), attending to others (correlation coefficient = 0.432, p-value = 0.001), analysis of emotions (correlation coefficient = 0.357, p-value = 0.002), and general health (GHQ-12) scores (correlation coefficient = 0.274, p-value = 0.018).

Verbal sharing of emotions among children with transfusion-dependent TM exhibits significant correlations with various factors. There is a positive correlation between verbal sharing of emotions and bodily awareness (correlation coefficient = 0.321, p-value = 0.005) as well as attending to others (correlation coefficient = 0.362, p-value = 0.001), indicating that higher levels of verbal sharing of emotions are associated with greater bodily awareness and attentiveness to others.

Acting out behavior among children with transfusion dependent TM shows correlations with various factors: There is a positive correlation between acting out behavior and bodily awareness (correlation coefficient = 0.233, p-value = 0.044), attending to others (correlation coefficient = 0.240, p-value = 0.038), and analysis of emotions (correlation coefficient = 0.255, p-value = 0.027), suggesting that higher levels of acting out behavior are associated with greater bodily awareness, attentiveness to others, and emotional analysis.

Bodily awareness among children with transfusion dependent TM shows correlations with various factors: There is a strong positive correlation between bodily awareness and attending to others (correlation coefficient = 0.422, p-value = 0.001), suggesting that higher levels of bodily awareness are associated with greater attentiveness to others. Bodily awareness also exhibits a positive correlation with externalizing behavior (correlation coefficient = 0.363, p-value = 0.001), indicating that higher levels of bodily awareness are associated with higher levels of externalizing behavior.

Attending to others' emotions in children with transfusion dependent TM shows correlations with various factors: There is a strong positive correlation between attending to others' emotions and analysis of emotions (correlation coefficient = 0.474, p-value = 0.001), suggesting that higher levels of attending to others' emotions are associated with the greater analysis of emotions. Attending to others' emotions also exhibits positive correlations with externalizing behavior (correlation coefficient = 0.245, p-value = 0.034) and the total score of behavioral

issues (correlation coefficient = 0.259, p-value = 0.025), indicating that higher levels of attending to others' emotions are associated with higher levels of externalizing behavior and overall behavioral issues.

There is a positive correlation between analysis of emotions and internalizing behavior (correlation coefficient = 0.264, p-value = 0.022), suggesting that higher levels of analysis of emotions are associated with higher levels of internalizing behavior.

Table 22 shows the relationship between various different categories of emotional regulation and family functioning. Differentiating emotions is negatively correlated with parents' physical and emotional functioning in the past month, indicating that lower levels of physical and emotional functioning among parents are associated with higher levels of differentiating emotions in their children (correlation coefficients = -0.304 and -0.394, p-values = 0.008 and 0.001, respectively). Additionally, parents' cognitive functioning and communication with their children are negatively correlated with differentiating emotions (correlation coefficients = -0.273 and -0.259, p-values = 0.018 and 0.025, respectively). Moreover, family functioning aspects such as daily activity, family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the previous month reveal negative correlations with differentiating emotions (correlation coefficients ranging from -0.297 to -0.377, p-values ranging from 0.001 to 0.010).

verbal sharing of emotions is negatively correlated with parents' cognitive functioning in the past month (correlation coefficient = -0.283, p-value = 0.014), indicating that lower levels of cognitive functioning among parents are associated with higher levels of verbal sharing of emotions in their children. Similarly, parental worry in the past month also shows a negative correlation with verbal sharing of emotions (correlation coefficient = -0.273, p-value = 0.018), suggesting that higher levels of parental worry are associated with lower levels of verbal sharing of emotions in their children. Additionally, family

functioning aspects such as family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores from previous month exhibit negative correlations with verbal sharing of emotions (correlation coefficients ranging from -0.282 to -0.432, p-values ranging from 0.001 to 0.014), indicating that poorer family functioning is associated with higher levels of verbal sharing of emotions among children with transfusion-dependent TM

Acting out behavior exhibits a negative correlation with parents' physical functioning in the past month acting out behavior (correlation coefficient = -0.254, p-value = 0.028), indicating that lower levels of physical functioning among parents are associated with higher levels of acting out behavior in their children. Similarly, parents' emotional functioning in the past month also shows a negative correlation with acting out behavior (correlation coefficient = -0.234, p-value = 0.043), suggesting that lower levels of emotional functioning among parents are associated with higher levels of acting out behavior in their children.

Additionally, Parents' physical functioning in the past month shows a negative correlation with bodily awareness (correlation coefficient = -0.299, p-value = 0.009), suggesting that lower levels of physical functioning among parents are associated with higher levels of bodily awareness in their children.

However, parents' social functioning, cognitive functioning, and communication in the past month show negative correlations with attending to others' emotions (correlation coefficients = -0.228, -0.301, -0.228, respectively; p-values = 0.049, 0.009, 0.050), suggesting that lower levels of parents' social, cognitive, and communication functioning are associated with higher levels of attending to others' emotions in their children. Among family functioning factors, there are negative correlations between attending to others' emotions and family functioning daily activity, family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning

summary scores (correlation coefficients ranging from -0.282 to -0.415; p-values ranging from 0.001 to 0.014), indicating that lower levels of family functioning across these areas are associated with higher levels of attending to others' emotions in children with transfusion-dependent TM.

Parents' communication in the past month shows a negative correlation with analysis of emotions (correlation coefficient = -0.289, p-value = 0.012), indicating that lower levels of parental communication are associated with higher levels of analysis of emotions in their children. Among family functioning factors, there are negative correlations between analysis of emotions and family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores of the previous month (correlation coefficients ranging from -0.228 to -0.242; p-values ranging from 0.037 to 0.049), suggesting that lower levels of family functioning across these categories are associated with higher levels of analysis of emotions in children with thalassemia.

Table 23 shows the relationship between various different categories of emotional regulation with level of depression and coping strategies. Regarding coping strategies, the frequency of emotional regulation shows a positive correlation with differentiating emotions (correlation coefficient = 0.310, p-value = 0.007), indicating that a higher frequency of emotional regulation is associated with a better ability to differentiate emotions. Similarly, the frequency of wishful thinking also exhibits a positive correlation with differentiating emotions (correlation coefficient = 0.415, p-value = 0.001), suggesting that a higher frequency of wishful thinking is associated with a better ability to differentiate emotions among children with transfusion-dependent TM. Regarding coping strategies, the efficacy of self-criticism and problem-solving shows positive correlations with verbal sharing of emotions (correlation coefficients = 0.385 and 0.271, p-values = 0.036 and 0.022, respectively), suggesting that higher efficacy in self-criticism and

problem-solving is associated with increased verbal sharing of emotions among children with transfusion-dependent TM.

verbal sharing of emotion is positively correlated with level of depression in children with TDTM correlation coefficients (0.234, p-values 0.043), indication high level of verbal sharing of emotions are found in depressive children.

Among coping strategies in children with transfusion dependent TM, there is a negative correlation between acting out behavior and distractions efficacy (correlation coefficient = -0.302, p-value = 0.011), indicating that higher efficacy in distractions is associated with lower levels of acting out behavior. Conversely, there is a positive correlation between acting out behavior and social withdrawal frequency (correlation coefficient = 0.366, p-value = 0.001), suggesting that higher frequency of social withdrawal is associated with higher levels of acting out behavior. Additionally, acting out behavior shows positive correlations with the frequency of cognitive restructuring (correlation coefficient = 0.267, p-value = 0.021), self-criticism (correlation coefficient = 0.257, p-value = 0.026), emotional regulation (correlation coefficient = 0.322, p-value = 0.005), and resignation (correlation coefficient = 0.243, p-value = 0.036) coping strategies, indicating that higher frequencies of these coping strategies are associated with higher levels of acting out behavior among children with transfusion dependent TM.

Additionally, there is a positive correlation between bodily awareness and problem-solving efficacy (correlation coefficient = 0.259, p-value = 0.029), indicating that higher levels of problem-solving efficacy are associated with higher levels of bodily awareness among children with TM. There is a positive correlation between bodily awareness in children with TDTM and depression (correlation coefficient = 0.234, p-value = 0.044), indicating children who experience depression are more sensitive towards their bodily sensation.

Attending to others' emotions shows a positive correlation with problem-solving efficacy as a coping strategy (correlation coefficient = 0.378, p-value = 0.001), suggesting that higher levels of attending to others' emotions are associated with higher levels of problem-solving efficacy among children with transfusion-dependent TM.

Analysis of emotions shows a positive correlation with distraction frequency as a coping strategy (correlation coefficient = 0.227, p-value = 0.050), this suggests that higher degrees of emotional analysis are connected with greater distraction frequency. There is an inverse relationship between the analysis of emotions and social withdrawal efficacy as a coping strategy (correlation coefficient = -0.403, p-value = 0.004), suggesting that higher levels of analysis of emotions are associated with lower levels of social withdrawal efficacy. Problem-solving frequency, problem-solving efficacy, emotional regulation frequency, and emotional regulation efficacy as coping strategies show positive correlations with analysis of emotions (correlation coefficients ranging from 0.251 to 0.391; p-values ranging from 0.001 to 0.030), indicating that higher levels of analysis of emotions are correlate with higher levels of these coping strategies. Finally, there is a positive relationship between the analysis of emotions and social support frequency as a coping strategy (correlation coefficient = 0.246, p-value = 0.033), suggesting that higher levels of analysis of emotions are associated with higher levels of seeking social support.

Table 24 shows the relationship between general health with behavioral issues. There is a positive correlation between GHQ-12 scores and externalizing behavior (correlation coefficient = 0.240, p-value = 0.038), as well as the total score of behavioral issues (correlation coefficient = 0.285, p-value = 0.013). These correlations suggest that higher GHQ-12 scores, indicating poorer mental health, are associated with higher levels of externalizing behavior and overall behavioral issues.

Table 25 shows the relationship between general health and family functions: GHQ-12 scores show a negative correlation with parental physical functioning in the past month (correlation coefficient = -0.240, p-value = 0.038), indicating that lower levels of parental physical functioning are associated with higher GHQ-12 scores, reflecting poorer mental health in children with thalassemia.

Table 26 shows the relationship between general health level of depression and coping strategies. This suggests that wishful thinking frequency as a coping strategy exhibits a positive correlation with GHQ-12 scores (correlation coefficient = 0.293, p-value = 0.011), suggesting that higher levels of wishful thinking frequency are associated with higher GHQ-12 scores, indicating poorer mental health.

Table 27 shows a relationship among different behaviour problems. internalizing behavior of children with transfusion-dependent TM with various other psychological factors such as level of emotional awareness, depression, general health, family functioning, and coping strategies. There is a strong positive correlation between internalizing behaviour and the total scores of behavioral issues (correlation coefficient = 0.513, p-value = 0.001), indicating that higher internalizing behavior is associated with higher overall behavioural issues.

Additionally, there's a strong positive correlation between attention problems and externalizing behaviour (correlation coefficient = 0.392, p-value = 0.001), indicating that higher attention problems are associated with higher levels of externalizing behaviour. Similarly, attention problems show a very strong positive correlation with the total scores on behaviour issues (correlation coefficient = 0.748, p-value = 0.001), suggesting that higher attention problems are strongly associated with overall higher levels of behaviour issues.

There is a very strong positive correlation between externalizing behaviour and the total scores on behaviour issues (correlation coefficient = 0.781, p-value = 0.001), indicating that higher levels of

externalizing behaviour are strongly associated with overall higher levels of behaviour issues.

Table 28 Internalizing behaviour exhibits a negative correlation with parental physical functioning in the past month (correlation coefficient = -0.280, p-value = 0.015), suggesting that lower levels of parental physical functioning are associated with higher levels of internalizing behaviour in children with thalassemia. Similarly, parental emotional functioning (correlation coefficient = -0.292, p-value = 0.011) and social functioning (correlation coefficient = -0.287, p-value = 0.012) in the past month also show negative correlations with internalizing behaviour, indicating that lower levels of parental emotional and social functioning are associated with higher levels of internalizing behavior in their children. Communication in the past month between parents and children also exhibits a negative correlation with internalizing behaviour (correlation coefficient = -0.287, p-value = 0.013), suggesting that better communication is associated with lower levels of internalizing behaviour. Total scores in the past month and summaries of parents' health-related quality of life and family functioning all show negative correlations with internalizing behaviour, with correlation coefficients of -0.308 and p-values of 0.007 for each factor, indicating that lower scores on these measures are associated with higher levels of internalizing behaviour.

Attention problems exhibit negative correlations with parental physical functioning, emotional functioning, social functioning, cognitive functioning, and communication in the past month, with correlation coefficients ranging from -0.368 to -0.447 and all p-values less than 0.003. This indicates that lower levels of parental functioning in these areas are associated with higher levels of attention problems in their children. Parental worry in the past month also shows a negative correlation with attention problems (correlation coefficient = -0.339, p-value = 0.003), suggesting that higher levels of parental worry are associated with higher levels of attention problems in their children. Similarly, family functioning, both in terms of daily activity and family

relationships, show negative correlations with attention problems, with correlation coefficients of -0.350 and -0.345, respectively, and p-values of 0.002. This indicates that lower levels of family functioning in these areas are associated with higher levels of attention problems in children. Total scores in the past month and summaries of parents' health-related quality of life and family functioning all show negative correlations with attention problems, with correlation coefficients of -0.479 and p-values of 0.001 for each factor, indicating that higher scores on these measures are associated with lower levels of attention problems.

Parental physical functioning, emotional functioning, social functioning, and cognitive functioning in the past month all exhibit negative correlations with externalizing behaviour, with correlation coefficients ranging from -0.253 to -0.350 and p-values less than 0.030. This indicates that lower levels of parental functioning in these areas are associated with higher levels of externalizing behaviour in their children. Family functioning, particularly in terms of family relationships, also shows negative correlations with externalizing behaviour, with a correlation coefficient of -0.295 and a p-value of 0.010. This suggests that lower levels of family functioning in these areas are associated with higher levels of externalizing behaviour in children. Total scores in the past month and summaries of parents' health-related quality of life and family functioning all show negative correlations with externalizing behaviour, with correlation coefficients of -0.301 and p-values of 0.009 for each factor, indicating that higher scores on these measures are associated with lower levels of externalizing behaviour.

Furthermore, there is a very high negative association between the overall score on behaviour issues and various aspects of parental functioning in the past month, including physical functioning, emotional functioning, social functioning, and cognitive functioning, with correlation coefficients ranging from -0.401 to -0.498 and all p-values less than 0.001. This indicates that lower levels of parental functioning in these areas are associated with higher total scores on behaviour

issues in their children. Communication in the past month also shows a negative correlation with the total score on behaviour issues, with a correlation coefficient of -0.374 and a p-value of 0.001, suggesting that Poorer levels of communication are connected with higher overall scores for behavioural difficulties. Parental worry in the past month exhibits a negative correlation with the total sum of scores on behaviour issues, with a correlation coefficient of -0.263 and a p-value of 0.023, indicating that high levels of parental worry are associated with total overall scores on behaviour issues. Family functioning, as indicated by daily activity and family relationships in the past month, shows negative correlations with the total score on behaviour issues, with correlation coefficients of -0.283 and -0.338, respectively, and p-values of 0.014 and 0.003. This suggests that lower levels of family functioning in these categories are associated with higher total scores on behaviour issues. Similarly, the total scores in the past month and summaries of parents' health-related quality of life and family functioning also exhibit negative correlations with the total score on behaviour issues, with correlation coefficients of -0.481 for each factor and p-values less than 0.001. This reveals that greater scores on these measures are connected with lower overall scores for behavioural issues.

Table 29 There is also a positive correlation between internalizing behaviour and depression (correlation coefficient = 0.292, p-value = 0.011), suggesting that higher levels of internalizing behavior are associated with higher levels of depression. Wishful thinking frequency and efficacy as coping strategies show positive correlations with internalizing behavior, with correlation coefficients of 0.258 (p-value = 0.025) and 0.250 (p-value = 0.043), respectively, indicating that higher levels of wishful thinking frequency and efficacy are linked with higher levels of internalizing behaviour.

Social withdrawal efficacy as a coping strategy shows a positive correlation with attention problems, with a correlation coefficient of 0.345 and a p-value of 0.015, indicating that higher efficacy in social

withdrawal as a coping strategy is associated with higher levels of attention problems.

Externalizing behaviour strategy shows a negative correlation with cognitive restructuring efficacy as a coping with a correlation coefficient of -0.274 and a p-value of 0.027, indicating that higher efficacy in cognitive restructuring as a coping strategy is associated with lower levels of externalizing behaviour.

Table 30 shows a relationship between parents of children with transfusion-dependent TM with the level of depression and coping strategies. Parents' emotional functioning in the past month correlates negatively with the frequency of emotional regulation and wishful thinking coping strategies in children with thalassemia, with correlation coefficients of -0.267 ($p = 0.020$) and -0.251 ($p = 0.030$), respectively. This implies that parents' better emotional well-being is linked to reduced occurrences of these coping mechanisms in their children. Similarly, parents' cognitive functioning in the past month correlates negatively with the efficacy of blaming others coping strategy in children with thalassemia, with a correlation value of -0.359 ($p = 0.020$), demonstrating that greater levels of cognitive functioning in parents correlate with poorer efficacy of this coping mechanism in their children.

Parental worry in the past month is inversely related to the frequency of problem-solving coping strategies in children with thalassemia, with a correlation value of -0.280 ($p = 0.015$), reveal that greater levels of worry among parents are connected with lower frequencies of problem-solving coping strategies in their children. Family functioning in terms of daily activity and family relationships in the past month correlates negatively with the frequency of emotional regulation coping strategy in children with thalassemia, with correlation coefficients of -0.307 ($p = 0.007$) and -0.367 ($p = 0.017$), respectively. This implies that lower levels of family functioning in these domains are associated with higher frequencies of emotional regulation coping strategies in children.

Additionally, family functioning in terms of family relationships in the past month correlates negatively with the efficacy of blaming others coping strategy and the frequency of wishful thinking coping strategy in children with thalassemia, with correlation coefficients of -0.367 (p = 0.017) and -0.270 (p = 0.019), respectively. This indicates that lower levels of family functioning in family relationships are associated with higher efficacy of blaming others coping strategy and higher frequencies of wishful thinking coping strategy in children.

Table 31 shows the relationship between depression and coping strategies in children with transfusion-dependent TM. Depression positively correlates with the frequency of blaming others' coping strategy in children with transfusion-dependent thalassemia, with a correlation of 0.247 (p-value, 0.032), and negatively correlates with efficiency of cognitive restructuring, with a correlation of -0.244 (p-value = 0.050). This study shows that children who use blaming others as a coping mechanism experience higher level of depression. Furthermore, those who use cognitive restructuring more effectively tend to experience less depression.

Table 32 shows the relationship among different strategies of coping in children with TDTM. Coping strategy frequency of distractions interacts favorably with distraction efficacy in children with transfusion-dependent thalassemia, with a correlation value of 0.414 (p-value = 0.001), demonstrating that higher frequency of employing distractions as a coping technique are connected with increased efficacy in controlling distractions. Distraction efficacy, in turn, correlates negatively with the frequency of self-criticism, problem-solving, emotional regulation, and wishful thinking coping strategies in children with transfusion-dependent thalassemia, with correlation coefficients of -0.274 (p = 0.022), -0.331 (p = 0.005), -0.245 (p = 0.041), and -0.271 (p = 0.023), respectively. This implies that higher efficacy in managing distractions is linked with lower frequencies of these coping strategies. However, distraction effectiveness in children suffering from thalassemia correlates positively with resignation efficacy, with a

correlation value of 0.304 (p = 0.024), This suggests that higher efficacy in distraction coping strategy coincides with higher efficacy in resignation coping strategy. Similarly, social withdrawal frequency in children with thalassemia correlates positively with social withdrawal efficacy, with a correlation of 0.382 (p-value, 0.007), suggesting that a higher frequency of social withdrawal is connected with higher efficacy in social withdrawal coping strategy.

Cognitive restructuring frequency in children with transfusion-dependent TM correlates positively with cognitive restructuring efficacy (correlation coefficient = 0.636, p = 0.001) and self-criticism frequency (correlation coefficient = 0.254, p = 0.028). Both Cognitive restructuring frequency and efficacy in children with thalassemia correlate positively with emotional regulation efficacy (correlation coefficient = 0.465 & 0.462, p = 0.001), social support frequency (correlation coefficient = 0.392 & 0.544, p = 0.001 & p = 0.001), social support efficacy (correlation coefficient = 0.333 & 0.581, p = 0.005, & p = 0.001), resignation frequency (correlation coefficient = 0.294 & 0.346, p = 0.010 & p = 0.005), and resignation efficacy (correlation coefficient = 0.344, p = 0.008). Cognitive restructuring efficacy in children with thalassemia also correlates positively with emotional regulation frequency (correlation coefficient = 0.247 & 0.471, p = 0.047 & p = 0.001).

Self-criticism frequency in children with transfusion-dependent TM correlates positively with self-criticism efficacy (correlation coefficient = 0.494, p = 0.006), problem-solving frequency (correlation coefficient = 0.263, p = 0.022), emotional regulation frequency (correlation coefficient = 0.381, p = 0.001), social support frequency (correlation coefficient = 0.297, p = 0.010), and resignation frequency (correlation coefficient = 0.293, p = 0.011). Self-criticism efficacy in children with thalassemia correlates positively with problem-solving efficacy (correlation coefficient = 0.433, p = 0.017), emotional regulation efficacy (correlation coefficient = 0.386, p = 0.035), wishful thinking efficacy (correlation coefficient = 0.391, p = 0.044), social support

frequency (correlation coefficient = 0.429, p = 0.018), social support efficacy (correlation coefficient = 0.509, p = 0.005), and resignation efficacy (correlation coefficient = 0.489, p = 0.011). Blaming others frequency in children with transfusion-dependent TM correlates positively with blaming others efficacy (correlation coefficient = 0.345, p = 0.025), problem-solving frequency (correlation coefficient = 0.230, p = 0.047), emotional regulation frequency (correlation coefficient = 0.308, p = 0.007), and wishful thinking frequency (correlation coefficient = 0.309, p = 0.007). Blaming others efficacy in children with thalassemia correlates positively with resignation efficacy (correlation coefficient = 0.396, p = 0.019).

Problem-solving frequency in children with transfusion-dependent TM correlates positively with problem-solving efficacy (correlation coefficient = 0.660, p = 0.001) and emotional regulation frequency (correlation coefficient = 0.253, p = 0.029). It also correlates positively with social support frequency (correlation coefficient = 0.247, p = 0.033). Emotional regulation frequency in children with thalassemia correlates positively with emotional regulation efficacy (correlation coefficient = 0.469, p = 0.001) and wishful thinking frequency (correlation coefficient = 0.262, p = 0.023). Additionally, Emotional regulation frequency and efficacy correlates positively with social support frequency (correlation coefficient = 0.490 & 0.519, p = 0.001), social support efficacy (correlation coefficient = 0.445 & 0.488, p = 0.001), and resignation frequency (correlation coefficient = 0.337 & 0.426, p = 0.003 & p = 0.001). Emotional regulation efficacy also correlate positively with resignation efficacy (correlation coefficient = 0.468, p = 0.001).

Wishful thinking frequency in children with thalassemia correlates positively with wishful thinking efficacy (correlation coefficient = 0.342, p = 0.005). Wishful thinking efficacy correlates positively with resignation efficacy (correlation coefficient = 0.286, p = 0.040). The frequency of social support among children with thalassemia has a substantial positive link with its efficacy, resignation frequency, and

resignation efficacy, with correlation coefficients of 0.870, 0.699, and 0.481, respectively, all with p-values of 0.001. Similarly, social support efficacy exhibits positive correlations with resignation frequency (correlation coefficient = 0.541, p = 0.001) and resignation efficacy (correlation coefficient = 0.471, p = 0.001). Additionally, resignation frequency in children with thalassemia strongly correlates positively with resignation efficacy, with a correlation value of 0.735 and a p-value of 0.001.

DISCUSSION

The present research was intended to assess the psychological functioning in children with transfusion-dependent thalassemia and compare it to that of healthy controls. The study seeks to distinguish between the coping strategies, emotional awareness, family functioning, behavioral issues, and depressive symptoms of both groups. The study was conducted at the Thalassemia Day Care Centre at Dayanand Medical College and Hospital in Ludhiana. The healthy control group was selected from local schools. A total of 225 participants, including 75 with transfusion-dependent thalassemia and 150 healthy controls, all aged between 8-16 years, were enrolled in the research. Before their participation, all individuals' parents provided written consent and completed a socio-demographic questionnaire. Participants were assessed using an emotion awareness questionnaire, general health questionnaire-12, pediatric symptom checklist, PEDSQL™ family impact module, KIDCOPE, and children's depression inventory, for both the experiment and control group. The collected data was then organized and analyzed using the SPSS software. The following results were obtained.

SOCIODEMOGRAPHIC VARIABLES

Data was described in terms of age, gender, educational qualification, family type, residence, and socio-economic status.

AGE

The study was conducted on young participants in the age group of 8-16 years. The mean age for both the experimental and control groups was 12.37 years. The Mean of both the groups was compared using the Z- test and the value obtained was not statistically significant. Thus, the groups were homogeneous based on the distribution of age. Similar findings in terms of age were found in studies by Örengül, A. C., et. al (2018) [66], Elzaree, F. A., (2018) [84], and Huang, X., (2024) [103].

GENDER

Males made up the majority of participants (61.3%) in both groups, while females made up the same percentage (38.7%). The statistics show that the experimental and control groups had similar gender distributions. Similar findings in terms of gender were found in studies by Thavorncharoensap M., (2010) [70], Elzaree, F. A., (2018) [84], Sinlapamongkolkul, P., (2020) [104], Gafer AA., (2020)[105], Huang, X., (2024).[103]

EDUCATIONAL QUALIFICATION

In the experimental group, 30.7% of children attended high school, 32% were in middle school, and 37.3% were in primary school. On the other hand, in the control group, the majority of children 36% were also in primary school, 29.3% were in middle school, and 34.7% were in high school. In both the group percentage of children in primary school was high. The data indicates uniformity in the distribution of education levels between the experimental and control groups. Similar findings were found by Sinlapamongkolkul, P., (2020) [104], and Huang, X., (2024).[103]

RESIDENCE

Both groups had a larger number of individuals from metropolitan regions. The experimental group comprises 70.7% urban participants, but the control group has much more urban individuals (81.3%) than the experimental group. Similar findings were found by Gafer AA., (2020) [105] and Sahu, S., (2023).[106]

FAMILY TYPE

In both the experimental and control groups maximum number of participants were from nuclear families 52.0% and 53.3% respectively. Similar findings were found by Sahu, S., (2023).[106]

SOCIO-ECONOMIC STATUS

Both the experimental and control group have the highest number of participants belonging to the Upper-Middle socio-economic status (experimental: 58.7%; control: 52%) followed by Upper socio-economic status (experimental: 25.3%; control: 34.7%), Lower-Middle socio-economic status was the next most represented category (experimental: 12%; control: 5.3%), and Upper-Lower socio-economic status (experimental: 2.7%; control: 8%). With the lowest representation in the Lower SES category (experimental: 1.3%; control: 0%). Similar findings were found by Elzaree, F. A., (2018) [84]

TIME SINCE DIAGNOSIS

The average duration since diagnosis was 11.39 ± 3.20 years. The shortest period from diagnosis was 4 years, while the highest was 16 years. The mean (SD) age of diagnosis was ±1.16 years. Our findings were well supported by the research conducted by Gafer AA., et. al., (2020) [105] and Mitra MN, (2021).[107]

MEAN PRE-TRANSFUSION HB AND AVERAGE REQUIREMENT OF TRANSFUSION

On average, in children with transfusion-dependent TM, the yearly pre-transfusion Hb level was 9.08 mg/dl, with the lowest level observed being 7.73 mg/dl. Patients required an average of 214.21 ml/kg packed cells per year, with the lowest requirement being 6.60 ml/kg. Our findings were well supported by the research conducted by Boonchooduang N, (2015)[108], Moirangthem, A., (2018)[109], Gafer AA., et. al., (2020) [105], and Mettananda, S., (2019).[110]

COST OF TREATMENT AND COST OF TRAVELING

The mean cost of treatment per month was 6983.33 rupees, with a minimum of 2000 rupees and a maximum of 30,000 rupees. Monthly mean travel cost was 1138.51 rupees, with a minimum of 100 rupees and a maximum of 12,000 rupees. Our findings were well supported by the research conducted by Moirangthem, A., (2018)[109], Raman V, 2019[60], and Alshamsi S,(2022).[111]

DURATION OF HOSPITAL STAY

Among the cases studied, the majority, comprising 50.7%, stayed in the hospital for 2 days per month with 38 cases falling into this category. Following closely behind, 40.0% of cases, a total of 30, stayed only for 1 day. A smaller proportion of cases, 8.0%, stayed for 3 days, amounting to 6 cases, while only 1.3% of cases, a single case, required a 4-day hospitalization. Therefore, the majority of cases stayed either 1 or 2 days in the hospital per month. Our findings were well supported by the research conducted by Boonchooduang N, (2015) [108], and Raman V, 2019.[60]

NUMBER OF MISSED SCHOOL DAYS

Out of all the cases examined, the highest percentage (58.7%) missed 2 days of school per month, which amounts to 44 cases. The second most common category was 1 day of missed school, which accounts for 24.0% of cases, or 18 cases. Our findings were well supported by the research conducted by Raman V, 2019[60] and Gafer AA., et. al., (2020).[105]

PRESENCE OF COMORBITIES

The most prevalent comorbidities among transfusion-dependent TM children are liver iron overload, affecting 36 cases (48.0%), and delayed puberty, with 16 cases (21.3%). Osteopenia, with 17 cases (22.7%), hypothyroidism, and increased serum ferritin levels which are present in 14 cases (18.7%) were also relatively common. Followed by

myocardial iron overload and osteoporosis were observed in 5 cases (6.7%). Our findings were well supported by the research conducted by Elzaree, F. A., (2018) [84], Mitra MN, (2021) [107], and Gafer AA., et. al., (2020).[105]

PHARMACOLOGICAL TREATMENT

The most prevalent pharmaceutical therapy was a mix of Deferasirox (DFX) and Deferiprone (DFP), which was utilized in 33 cases (44.0%). Deferasirox (DFX) alone was the second most common treatment with 26 cases (34.7%). Combination therapies involving Deferasirox (DFX) with other agents, such as Deferoxamine (DFO), hemoglobin inducers, or Thyronorm, were also employed but to a lesser extent. Similar findings were found in research conducted by Mitra MN, et. al., (2021) [96] and Shafie, A.A., (2020).[112]

COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION-DEPENDENT THALASSEMIA.

The major goal of this study was to assess and compare coping methods, emotional awareness, internalising and externalising behaviours, and family functioning among children with transfusion-dependent TM and healthy controls. Furthermore, the study sought to evaluate the interrelationships between these characteristics, especially amongst the group of children who are transfusion-dependent. Furthermore, the study sought to evaluate the interrelationships between these characteristics, especially for the group of children with transfusion-dependent TM.

COPING STRATEGIES

In each group. Social withdrawal coping strategies differ significantly between groups, with p-values of 0.005 and 0.001, respectively. The group participating in the experiment experienced more social disengagement and performed less well in terms of managing it. These findings suggest that individuals with transfusion-dependent

thalassemia may face unique challenges in coping with social withdrawal compared to individuals without the condition. One possible explanation for these results could be the chronic nature of thalassemia, its associated medical treatments, and its strict health regime, which may lead to increased feelings of isolation and difficulty in social interactions. Individuals with thalassemia may also experience greater physical limitations or health-related concerns, which could contribute to their higher frequency of social withdrawal coping strategies and lower efficacy in managing them.

When it comes to cognitive restructuring and self-criticism coping strategy, the control group had a higher proportion of participants reporting higher cognitive restructuring coping strategy effectiveness levels (p-value = 0.001). Whereas, for self-criticism, a greater percentage of participants in the control group reported higher frequency and effectiveness than those in the experiment (p-value = 0.001), suggesting a statistically significant difference. Moreover, the higher effectiveness levels of cognitive restructuring and self-criticism coping strategies in the control group may be attributed to differences in psychological resilience or coping mechanisms between the two groups. Individuals in the control group may have developed more adaptive coping strategies over time, possibly due to their healthier physical condition or access to adequate support systems.

There was no noticeable difference in the frequency of problem-solving between the control and experimental groups (p-value = 0.628). However, there was a substantial difference in the efficacy of solving problems between the two groups (p-value = 0.015). The Chi-square test score of 14.123 demonstrates that the difference is significant. Overall, the evidence shows that despite the frequency of problem-solving being equal between the groups, the control group has greater levels of problem-solving efficacy. One plausible explanation for these results could be related to the unique challenges faced by individuals with transfusion-dependent thalassemia, who comprise the

experimental group. Managing a chronic illness like thalassemia requires individuals to navigate various medical treatments, adhere to strict healthcare regimens, and cope with potential physical and emotional limitations. Consequently, individuals in the experimental group may allocate more cognitive resources toward managing their health condition, potentially impacting their problem-solving effectiveness in non-health-related contexts.

The experimental and control groups had equal levels of wishful thinking (p=0.248), but there was a significant difference in its efficiency (p=0.019). Overall, the experimental group performed less well on wishful thinking. It is worth noting that the groups reported similar use of wishful thinking coping mechanisms, however, the experimental group performed less effectively with this strategy. This discrepancy could be due to differences in the perceived control over their situations or the perceived feasibility of wishful thinking as a coping mechanism.

Moreover, there were no notable distinctions between the experimental and control groups regarding coping strategies such as blaming others, emotional regulation, seeking social support, and resignation. This lack of significant differences suggests that both groups employ comparable coping mechanisms when confronted with stressors and difficulties. This finding suggests that the discrepancy in problem-solving effectiveness observed between the two groups is not directly related to differences in coping strategy preferences.

EMOTIONAL AWARENESS

The experimental group scored lower in differentiating emotions (4.91 vs. 6.01), sharing emotions (2.23 vs. 2.89), acting out (3.89 vs. 5.16), bodily awareness (3.43 vs. 4.23), and attending to others (4.55 vs. 5.06) with p-values of 0.021, 0.001, 0.001, 0.007, and 0.039, respectively. Nevertheless, no notable difference was observed between the two groups (p-value = 0.209) when examining emotions.

To summarise, the group participating in the experiment scored worse across several emotional management methods than the control group.

This implies that individuals with transfusion-dependent thalassemia scored lower in differentiating emotions, sharing emotions, acting out, bodily awareness, and attending to others. These findings could be due to the psychological and emotional burden associated with living with a chronic illness. Children with TDT may face heightened emotional distress, physical discomfort, and limitations in daily activities. This could manifest in various ways, including challenges in accurately identifying and expressing emotions, as well as in managing impulsive behaviors and maintaining awareness of bodily sensations. Furthermore, individuals with transfusion-dependent thalassemia may experience social and interpersonal challenges due to their medical condition, which could impact their ability to share and attend to others' emotions effectively. The demands of managing a chronic illness may also detract from their capacity to focus on the emotions and needs of those around them.

Interestingly, while there were substantial variations in various elements of emotional regulation between the two groups, there was no significant difference when emotions were examined directly. This implies that people with transfusion-dependent thalassemia may struggle with specific components of emotional regulation, and their overall emotional experiences may not differ significantly from those of individuals without the condition.

BEHAVIOURAL ISSUES

On the internalising subscale, the experimental group had a higher mean score (Mean=1.59, SD=1.41) than the control group (Mean=1.23, SD=1.21). The Z-score was 1.953 with a p-value of 0.052, indicating a trend towards significance. According to the interpretation criteria, a PSC-17 Internalizing score was considered positive if it was ≥ 5. Both groups have mean scores below this threshold, suggesting that neither

group as a whole exhibits significant internalizing symptoms. In terms of attention, the experimental group scored lower (mean= 2.40, SD=1.92) than the control group (mean=2.84, SD=2.25). The Z-score was -1.253, with a p-value of 0.210, indicating no statistically significant distinction between groups. A PSC-17 attention score was considered positive if it was ≥ 7. Both groups had mean scores below this threshold, indicating that attention-related issues were not prevalent in either group. For externalising symptoms, there was a small disparity between the groups, with the experimental group (mean=2.33, SD=2.00) having somewhat higher ratings then the control group (Mean=2.26, SD=2.44). The Z-score was -0.960 with a p-value of 0.337, indicating no significant distinction. A PSC-17 externalizing score was considered positive if it was ≥ 7. Both groups have mean scores below this threshold, suggesting that externalizing symptoms were not prominent in either group. Regarding the total score, there was no substantial difference observed between the experimental (Mean=6.32, SD=4.05) and control groups (Mean=6.33, SD=4.64), with a Z-score close to zero (-0.021) and a p-value of 0.983, suggesting no significant variation. PSC-17 total score was considered positive if it was ≥ 15. Both groups had mean scores well below this threshold, indicating that overall behavioral or emotional problems were not prevalent in either group. These findings were supported by research conducted by Elzaree, F. A., (2018).[84]

DEPRESSION

The experimental group had a significantly higher mean depression score (Mean=47.65, SD=12.56) than the control group (Mean=43.26, SD=10.35), with a Z-score of 2.790 and a p-value of 0.006. This indicates that individuals in the experimental group experienced more depressive symptoms on average compared to those in the control group. Findings were supported by research conducted by Fatemeh Behdani, (2015), [65], Al-Hakeim HK,(2020) [113], and Suryawan A, (2021) [114] suggest that depression was common among children diagnosed with TDT.

FAMILY FUNCTIONING

The study found that the TM group had significantly lower mean scores in physical (387.80), emotional (306.76), social (275), cognitive (369.60), and communication (204.67) functions, in comparison to the control group (physical: 489.50, emotional: 400.17, social: 352.83, cognitive: 443.83, communication: 270). The TM group also reported significantly higher levels of worry (250.55) than the control group (462.17). Overall, parents of children with transfusion-dependent TM had considerably lower overall mean scores (65.52) and reported much poorer health-related quality of life (117.94) than the control group. Furthermore, as opposed to the parents in the control group, mean score of 391.98, parents of children with transfusion-dependent TM had significantly lower family functioning, as evident in their mean score of 294.85. Family impact and overall health-related quality of life differed significantly between the two groups (p=0.001). The outcomes of Deepak SS's 2017 [75] study aligned with our conclusions, demonstrating significant impacts on multiple aspects such as the total score, parent health-related quality of life summary score, and family functioning summary score. This underscores a noticeable decline in the psychosocial well-being of parents with children affected by thalassemia.

RELATIONSHIP WITH DEMOGRAPHICS AND PSYCHOLOGICAL VARIABLES

Our study showed a negative correlation (coefficient = -0.191) ***between children's age, parents' physical function, and family functioning in the past month*** (p-value = 0.100), indicating that older participants and parents tend to have lower physical function. Findings were supported by Mikael, N. A., (2018).[115] As children become older, they may need more attention, care, and support from their parents for a variety of reasons, including academic demands, social activities, or health issues. Simultaneously, parents may experience age-related declines in physical health, making it more challenging for them to fulfill

these responsibilities effectively. This increased demand coupled with decreased physical ability can strain family dynamics and functioning.

Age was found to have moderate to strong positive correlations with the utilization and effectiveness of coping strategies such as cognitive restructuring (coefficient = 0.266, p-value = 0.021; coefficient = 0.399, p-value = 0.001), emotional regulation efficacy (coefficient = 0.273, p-value = 0.021), social support frequency and effectiveness (coefficient = 0.551, p-value = 0.001; coefficient = 0.520, p-value = 0.001), and resignation (coefficient = 0.377, p-value = 0.001; coefficient = 0.269, p-value = 0.039). The findings indicate that with increasing age, individuals were prone to utilizing and executing cognitive restructuring methods more frequently and proficiently. This trend might be ascribed to the accrual of life experiences and the enhancement of cognitive abilities over the years. Furthermore, older individuals tend to be more competent at managing their emotions, which might be attributed to a mix of maturity and increased self-awareness, allowing them to manage their emotions more successfully. The findings also suggest that as individuals get older, they are more likely to seek and value social assistance. This inclination could be attributed to the establishment of robust social networks among older individuals, fostering a greater sense of comfort in seeking and receiving support from others. Furthermore, as individuals age, they tend to be more inclined towards adopting resignation as a coping strategy, which may be influenced by various factors such as accumulated life stressors or a shift in life priorities as one age.

These correlations may be driven by developmental aspects, including the refinement of emotional regulation skills and the strengthening of social support systems as individuals progress through life stages. In addition, older individuals might have had more opportunities to learn and practice coping methods over time.

The amount of time after diagnosis was shown to be favorably linked with various coping techniques among the subjects. In particular, there was a clear positive association between time since diagnosis and the efficacy of cognitive restructuring (coefficient = 0.413, p-value = 0.001) and emotional regulation (coefficient = 0.265, p-value = 0.028) as coping strategies. Additionally, there was a significant positive correlation between time since diagnosis and both the frequency (coefficient = 0.529, p-value = 0.001) and effectiveness (coefficient = 0.436, p-value = 0.001) of social support, suggesting an increased reliance on seeking social support over time. Moreover, there was a positive correlation between the frequency of using resignation as a coping strategy and the time since diagnosis (coefficient = 0.381, p-value = 0.001). The findings indicate that over time, individuals develop better cognitive skills and emotional regulation abilities, possibly as a result of learning from their experiences and adapting to their condition. Furthermore, the study identifies a significant positive correlation between the duration since diagnosis and both the frequency and effectiveness of seeking social support as a coping mechanism. This indicates that as individuals spend more time dealing with their diagnosis, they increasingly rely on seeking and receiving support from others. This might be attributable to a growing realization of the value of social networks. Additionally, the positive correlation between the frequency of utilizing resignation as a coping strategy and the time since diagnosis suggests that individuals may become more inclined to resort to resignation over time. This might be due to factors such as prolonged exposure to stressors associated with their diagnosis or a sense of resignation stemming from the chronic nature of their condition.

The mean pre-transfusion hemoglobin level in children with transfusion-dependent TM (TM) shows a moderate negative correlation with internalizing symptoms (correlation coefficient = -0.261, p-value = 0.024), indicating that lower hemoglobin levels was associated with higher levels of internalizing symptoms. Lower

hemoglobin levels were linked to heightened internalizing symptoms like anxiety and depression. Initially, the physical manifestations of anemia, such as fatigue and weakness, can induce feelings of low energy, lethargy, and reduced motivation, often associated with depression. Moreover, chronic conditions like thalassemia can introduce significant psychosocial stressors for both individuals and their families, amplifying levels of anxiety and depressive symptoms. It's crucial to recognize the reciprocal relationship between physical and mental health. While lower hemoglobin levels may contribute to increased internalizing symptoms, psychological distress can also negatively impact physical health outcomes by affecting treatment adherence, self-care practices, and overall disease management.

The physical function of parents in the past month demonstrates a moderate positive correlation with the mean pre-transfusion hemoglobin level in TM children (correlation coefficient = 0.281, p-value = 0.015), suggesting that better physical function in parents is associated with higher mean pre-transfusion hemoglobin levels in their children. Similarly, the social function of parents in the past month also exhibits a moderate positive correlation with the mean pre-transfusion hemoglobin level in TM children (correlation coefficient = 0.270, p-value = 0.019), indicating that better social function in parents was associated with higher mean pre-transfusion hemoglobin levels in their children.

The data indicating a positive correlation between higher pre-transfusion hemoglobin levels in children with transfusion-dependent thalassemia (TM) and better physical and social functioning of their parents raises interesting insights into the potential reciprocal relationship between the health status of the child and the well-being of the parents. Firstly, the association suggests that when children with TM have higher hemoglobin levels before transfusions, it may signify better disease management and overall health outcomes. This could lead to reduced stress and burden on parents, allowing them to focus on their own physical and social well-being. Conversely, better physical

and social functioning of parents may contribute to improved health outcomes for their children.

The average requirement of hemoglobin (HB) was positively correlated with the verbal sharing of emotions**,** with a correlation coefficient of 0.247 and a p-value of 0.033. It implies that there was a moderate positive correlation between average requests for Hb and the amount to which individuals share their emotions vocally. It's plausible that children who require higher levels of hemoglobin may have more severe symptoms or complications related to their condition, which could influence their emotional experiences. For instance, pain, fatigue, and limitations in physical activity associated with low hemoglobin levels may contribute to heightened emotional distress, prompting children to express their feelings verbally as a means of seeking support and validation from others. It's essential to consider the physiological implications of hemoglobin levels on brain function and emotional regulation. Hemoglobin carries oxygen to tissues and organs, including the brain, which is crucial for cognitive and emotional processing. Higher hemoglobin levels may indicate better oxygenation of the brain, potentially enhancing cognitive function and the ability to articulate and express emotions verbally.

The cost of treatment for children with transfusion-dependent TM correlates positively with attending to others (correlation = 0.286, p-value = 0.013), indicating that as the treatment cost increases, there's a tendency for individuals to pay more attention to others. Conversely, there's a negative correlation between the cost of treatment and parents' social function in the past month (correlation = -0.290, p-value = 0.012), parental worry in the past month (correlation = -0.239, p-value = 0.039), and family functioning as a consequence of relationships throughout the previous month (correlation = -0.268, p-value = 0.020). This suggests that as the treatment cost rises, there's a likelihood of decreased social functioning, increased parental worry, and strained family relationships.

The time spent in the hospital by children with TM shows various correlations with their emotional and behavioral factors*.* There was a moderately positive correlation between the time spent in the hospital and the tendency to engage in acting out behaviors (correlation = 0.315, p-value = 0.006). Conversely, there was a moderately negative correlation between the time spent in the hospital and the efficacy of distractions as a coping strategy (correlation = -0.246, p-value = 0.040), suggesting that longer hospital stays may hinder the effectiveness of distractions in managing emotions. Additionally, there was a strong negative correlation between the time spent in the hospital and the efficacy of self-criticism as a coping strategy (correlation = -0.426, p-value = 0.019), indicating that longer hospital stays were associated with lower levels of self-criticism among children with TM. The moderately positive correlation between hospitalization duration and acting out behaviors suggests that extended stays in the hospital may exacerbate the tendency of children with TM to engage in disruptive or attention-seeking behaviors. This could be attributed to factors such as boredom, frustration, or the stress of being away from familiar environments. Increased efficacy of distractions as a coping strategy implies that longer hospital stays may undermine the effectiveness of distraction techniques in managing emotions. The strong negative correlation between hospitalization duration and the efficacy of self-criticism as a coping strategy, may suggest a protective effect of hospitalization, wherein prolonged medical care and support foster a more compassionate or accepting attitude towards oneself.

The cost of travel was positively correlated with the ability to differentiate emotions among individuals with transfusion-dependent TM. Specifically, there was a moderate positive correlation (correlation coefficient = 0.266, p-value = 0.022) between the cost of travel and the capacity to distinguish between different emotions. This suggests that individuals who incur higher travel costs may demonstrate a heightened ability to recognize and differentiate emotions compared to those with lower travel expenses. There was an

intriguing link between financial investment in travel and emotional awareness. Individuals who incur higher travel expenses may have access to diverse experiences and social interactions, contributing to their enhanced capacity to recognize and distinguish between different emotions.

The number of missed school days among children with thalassemia was associated with various factors. There was a moderate positive correlation (correlation coefficient = 0.243, p-value = 0.035) between missed school days and the tendency to exhibit acting-out behaviors. Prolonged absences from school due to thalassemia-related issues may lead to feelings of frustration or disengagement, prompting children to exhibit acting-out behaviors as a form of expression. Additionally, parents' worry in the past month shows a moderate negative correlation (correlation coefficient = -0.269, p-value = 0.020) with absenteeism from school, suggesting that greater levels of parental worry may be linked to fewer missed school days. Higher levels of parental worry may motivate proactive measures to ensure their child's health and well-being, potentially reducing the frequency of missed school days. Furthermore, blaming others as a coping strategy was negatively correlated with its efficacy (correlation coefficient = -0.346, p-value = 0.025), indicating that relying on blaming others may not be effective in reducing missed school days among children with thalassemia. It implies that attributing responsibility to external factors may not effectively address the underlying issues contributing to school absenteeism.

Relationship between various domains of emotional regulation with other psychological parameters such as children with TM general health, level of depression, behavior issues, coping strategies, and family functioning*.*

Differentiating emotions among children with transfusion-dependent TM show significant correlations with various factors. There was a positive correlation between differentiating emotions and verbal

sharing of emotions (correlation coefficient = 0.237, p-value = 0.041), acting out behaviors (correlation coefficient = 0.284, p-value = 0.014), bodily awareness (correlation coefficient = 0.322, p-value = 0.005), attending to others (correlation coefficient = 0.432, p-value = 0.001), analysis of emotions (correlation coefficient = 0.357, p-value = 0.002), and general health (GHQ-12) scores (correlation coefficient = 0.274, p-value = 0.018), this indicates that individuals who were better at differentiating their emotions were more inclined to express and communicate them verbally. This ability to articulate one's emotions verbally may also be more prone to outwardly expressing their emotions through behaviors. These individuals may have heightened awareness of bodily sensations and physiological responses associated with emotions. This heightened bodily awareness may contribute to a more comprehensive understanding and processing of emotions. This may also lead to demonstrating greater empathy and attentiveness towards the emotions and needs of others and engaging in deeper introspection and analysis of their emotional experiences.

Furthermore, parents' physical and emotional functioning in the past month was negatively correlated with differentiating emotions, indicating that lower levels of physical and emotional functioning among parents were linked with higher levels of differentiating emotions in their children (correlation coefficients = -0.304 and -0.394, p-values = 0.008 and 0.001, respectively). Additionally, parents' cognitive functioning and communication with their children were negatively correlated with differentiating emotions (correlation coefficients = -0.273 and -0.259, p-values = 0.018 and 0.025, respectively). Moreover, family functioning aspects such as daily activity, family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month show negative correlations with differentiating emotions (correlation coefficients ranging from -0.297 to -0.377, p-values ranging from 0.001 to 0.010). The negative correlation suggests that when parents' cognitive functioning is impaired or their communication with

their children is ineffective, their children may demonstrate a higher ability to differentiate emotions. Children develop enhanced emotional awareness and sensitivity as a response to challenges in parental communication or cognitive functioning. when overall family functioning is compromised, children may exhibit a higher capacity to discern and differentiate emotions. Children may become more attuned to emotional cues and nuances in their environment when daily activities within the family are disrupted or stressful and as a result, become more adept at recognizing and differentiating emotions as a means of understanding and navigating familial tensions.

Regarding coping strategies, the frequency of emotional regulation shows a positive correlation with differentiating emotions *(*correlation coefficient = 0.310, p-value = 0.007), indicating that a higher frequency of emotional regulation was associated with a better ability to differentiate emotions. Similarly, the frequency of wishful thinking also exhibits a positive correlation with differentiating emotions (correlation coefficient = 0.415, p-value = 0.001), suggesting that a higher frequency of wishful thinking is associated with a better ability to differentiate emotions among children with transfusion-dependent TM. Overall, these findings suggest that both emotional regulation and wishful thinking play roles in shaping children's ability to differentiate emotions. Wishful thinking may serve as a form of escapism or temporary relief from distressing emotions, it also reflects cognitive processing and emotional engagement. Children who engage in wishful thinking may actively reflect on their emotional experiences and imagine alternative emotional states or outcomes, fostering empathy and emotional insight.

Verbal sharing of emotions among children with transfusion-dependent TM exhibits significant correlations with various factors. There was a positive correlation between verbal sharing of emotions and bodily awareness (correlation coefficient = 0.321, p-value = 0.005) as well as attending to others (correlation coefficient = 0.362, p-value = 0.001), demonstrating that higher degrees of verbal sharing of

emotions were connected with increased body awareness and attentiveness to others. Regarding coping strategies, the efficacy of self-criticism and problem-solving shows positive correlations with verbal sharing of emotions (correlation coefficients = 0.385 and 0.271, p-values = 0.036 and 0.022, respectively), suggesting children with transfusion-dependent TM use Effective self-criticism by serving as constructive self-evaluation rather than harsh self-judgment, allowing individuals to acknowledge and verbalize their emotions more openly. Effective problem-solving may foster communication and interpersonal skills, both of which can facilitate emotional expression and sharing.

Moreover, parents' cognitive functioning in the past month was negatively correlated with verbal sharing of emotions (correlation coefficient = -0.283, p-value = 0.014), indicating that lower levels of cognitive functioning among parents were correlated with higher levels of verbal sharing of emotions in their children. Similarly, parental worry in the past month also shows a negative correlation with verbal sharing of emotions (correlation coefficient = -0.273, p-value = 0.018), suggesting that greater levels of parental worry were linked with lower levels of verbal sharing of emotions in their children. Suggesting when children do not communicate about their problems or isolate themselves leads to increased worry in their parents related to their well-being.

Additionally, family functioning aspects such as family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month exhibit negative correlations with verbal sharing of emotions (correlation coefficients ranging from -0.282 to -0.432, p-values ranging from 0.001 to 0.014), indicating that poorer family functioning was associated with higher levels of verbal sharing of emotions among children with transfusion-dependent TM. verbal sharing of emotion was positively correlated with the level of depression in children with TDTM correlation coefficients (0.234, p-values 0.043), indicating a high level of verbal sharing of emotions was found in depressive children.

Children with TDTM who have depressive symptoms then share their problems with others to seek reassurance and support.

Acting out behavior among children with transfusion-dependent TM shows correlations with various factors: There was a positive correlation between acting out behavior and bodily awareness (correlation coefficient = 0.233, p-value = 0.044), attending to others (correlation coefficient = 0.240, p-value = 0.038), and analysis of emotions (correlation coefficient = 0.255, p-value = 0.027), indicating that increased levels of acting out behavior were linked with heightened bodily awareness, attentiveness to others, and emotional analysis. Parents' physical functioning in the past month exhibits a negative correlation with acting-out behavior (correlation coefficient = -0.254, p-value = 0.028), The data suggests that parents with reduced physical functioning tended to have children exhibiting elevated levels of acting-out behavior. The more the child resumes acting out behavior more energy, attention, vigilance, and effort parents have to exert leading to their deteriorating physical functioning.

Similarly, parents' emotional functioning in the past month also shows a negative correlation with acting out behavior (correlation coefficient = -0.234, p-value = 0.043), suggesting when parents experience higher levels of emotional distress or instability, they may have limited emotional resources available to effectively support and guide their children. Consequently, children may be more likely to exhibit acting-out behaviors as a means of expressing their emotional distress or seeking attention in response to their parent's emotional struggles.

Among coping strategies in children with transfusion-dependent TM, there was a negative correlation between acting-out behavior and distraction efficacy (correlation coefficient = -0.302, p-value = 0.011), indicating that higher efficacy in distractions was associated with lower levels of acting-out behavior i.e., more they able to effectively distract themselves from distressing emotions less likely they would engage in

acting out behaviour. Conversely, there was a positive correlation between acting out behavior and social withdrawal frequency (correlation coefficient = 0.366, p-value = 0.001), suggesting that a when higher frequency of social withdrawal was used they experience feelings of isolation, consequently resulting in higher levels of acting out behavior. Additionally, acting out behavior shows positive correlations with the frequency of cognitive restructuring (correlation coefficient = 0.267, p-value = 0.021), self-criticism (correlation coefficient = 0.257, p-value = 0.026), emotional regulation (correlation coefficient = 0.322, p-value = 0.005), and resignation (correlation coefficient = 0.243, p-value = 0.036) Coping strategies were found to be correlated with acting out behavior in children with transfusion-dependent thalassemia major (TM), suggesting that greater utilization of these coping strategies is linked to increased levels of acting out behavior in this group of children.

This could imply that children who frequently engage in cognitive restructuring may be more likely to act out, possibly because they were constantly trying to reinterpret or make sense of their circumstances, which can lead to frustration or emotional dysregulation. highly self-critical children may internalize negative feelings about their condition or their coping abilities, leading to outward displays of frustration or anger. However, it's possible that in the context of transfusion-dependent TM, children who were more adept at regulating their emotions may also be more aware of their frustrations or limitations, leading to more visible expressions of distress. Children with TM who feel resigned to their condition or who have given up trying to cope actively may be more likely to act out in frustration or as a way of seeking attention or relief from their situation.

Bodily awareness among children with transfusion-dependent TM shows correlations with various factors: There was a strong positive correlation between bodily awareness and attending to others (correlation coefficient = 0.422, p-value = 0.001), suggesting increased levels of bodily awareness were linked with greater attentiveness to

others. Bodily awareness also exhibits a positive correlation with externalizing behavior (correlation coefficient = 0.363, p-value = 0.001), suggesting that increased levels of bodily awareness were linked to elevated levels of externalizing behavior. Individuals have a heightened awareness of their bodily sensations, they may also experience emotions more intensely. Difficulty in regulating these intense emotions could lead to externalizing behaviors as a way of expressing.

Parents' physical functioning in the past month shows a negative correlation with bodily awareness (correlation coefficient = -0.299, p-value = 0.009), indicating that heightened bodily awareness in children was linked with lower levels of physical functioning among their parents**.**

Among coping strategies*,* there was a positive correlation between bodily awareness and problem-solving efficacy (correlation coefficient = 0.259, p-value = 0.029), suggesting that greater proficiency in problem-solving was linked to heightened levels of bodily awareness among children with TM. Because the mind-body connection suggests that physical sensations and mental processes are interconnected, heightened bodily awareness may enhance this connection, allowing individuals to leverage physical sensations as cues for cognitive processes. There was a positive correlation between bodily awareness in children with TDTM and depression (correlation coefficient = 0.234, p-value = 0.044), indicating children who experience depression were more sensitive towards their bodily sensations.

Attending to others' emotions in children with transfusion-dependent TM shows correlations with various factors: There was a strong positive correlation between attending to others' emotions and analysis of emotions (correlation coefficient = 0.474, p-value = 0.001), indicating that heightened attention to others' emotions correlated with a more thorough analysis of emotions. Attending to others' emotions also exhibits positive correlations with externalizing behavior (correlation coefficient = 0.245, p-value = 0.034) and the total score of

behavioral issues (correlation coefficient = 0.259, p-value = 0.025), This suggests that individuals who demonstrate greater attentiveness to the emotions of others tend to exhibit higher levels of externalizing behavior and overall behavioral challenges. This correlation implies that those who closely observe emotional cues in others may also possess a tendency to reflect on and analyze emotions, both within themselves and in others, which could also contribute to difficulties in emotion regulation and impulse control. Consequently, they might exhibit a higher susceptibility to externalizing behaviors.

The social functioning, cognitive functioning, and communication of parents in the preceding month demonstrate adverse correlations with their ability to attend to others' emotions.s (correlation coefficients = -0.228, -0.301, -0.228, respectively; p-values = 0.049, 0.009, 0.050), suggesting that lower levels of parents' social, cognitive, and communication functioning were linked with increased levels of attending to others' emotions in their children. In some cases, children may take on roles and responsibilities typically associated with parents—a phenomenon known as parentification. If parents are struggling with social, cognitive, or communication difficulties, children may feel a heightened sense of responsibility to care for and support their parents. This sense of parentification may drive children to become more attentive to the emotions and needs of others, including their parents, as they navigate their roles within the family. Among family functioning factors, there were negative correlations between attending to others' emotions and family functioning daily activity, family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month (correlation coefficients ranging from -0.282 to -0.415; p-values ranging from 0.001 to 0.014), demonstrating that lower levels of family functioning across these categories were connected with a greater degree of attention to others' emotions in children with transfusion-dependent TM, suggesting that Transfusion-dependent thalassemia is a chronic illness that can significantly impact family dynamics and

functioning. The demands of managing a chronic health condition may strain family resources, disrupt routines, and contribute to emotional distress within the family. Children with TM may be particularly sensitive to these disruptions and may adopt a vigilant stance toward others' emotions as a way to navigate the challenges posed by the illness and its impact on family life.

Additionally, attending to others' emotions ***shows a positive correlation with problem-solving efficacy as a coping strategy*** (correlation coefficient = 0.378, p-value = 0.001), indicating that increased attentiveness to others' emotions correlated with heightened effectiveness in problem-solving among children with transfusion-dependent TM. The reason for such findings was that attending to others' emotions requires a certain level of emotional intelligence, including the ability to recognize, understand, and respond to the emotions of others. Children with TDTM, who are more attuned to the emotions of those around them may possess stronger emotional awareness and interpersonal skills. Emotional intelligence was closely linked to problem-solving efficacy as individuals with high emotional intelligence are often better equipped to manage interpersonal conflicts, navigate complex social situations, and generate effective solutions to problems.

Analysis of emotions among children in transfusion-dependent TM correlates with various factors: There was a positive correlation between analysis of emotions and internalizing behavior (correlation coefficient = 0.264, p-value = 0.022), indicating that higher degrees of emotional analysis were connected with greater levels of internalising behaviour.

Parents' communication in the past month shows a negative correlation with analysis of emotions (correlation coefficient = -0.289, p-value = 0.012), indicating parents communicate less about emotions or if communication is strained or ineffective, children may have fewer opportunities to learn about emotions through observation and

interaction. As a result, children may rely more on self-analysis to make sense of their own emotional experiences. Among family functioning factors, there were negative correlations between analysis of emotions and family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month (correlation coefficients ranging from -0.228 to -0.242; p-values ranging from 0.037 to 0.049), This suggests that poorer levels of family functioning across these areas were related with greater amounts of emotional analysis in children with thalassemia. When family relationships are strained or when there is conflict within the family, children may feel a greater need to analyze their own emotions as a way to understand and manage their feelings in the context of family dynamics.

Analysis of emotions shows a positive correlation with distraction frequency as a coping strategy (correlation coefficient = 0.227, p-value = 0.050), Higher degrees of emotional analysis were connected with greater levels of distraction frequency. There was a negative correlation between the analysis of emotions and social withdrawal efficacy as a coping strategy (correlation coefficient = -0.403, p-value = 0.004), This suggests that greater capacities of emotional analysis correspond with lower levels of social disengagement efficacy. Individuals who engage in deep analysis of their emotions may occasionally find themselves overwhelmed by intense or distressing feelings. In response, they may consciously or unconsciously seek distractions to temporarily alleviate their emotional discomfort and deep emotional analysis fosters a sense of self-sufficiency and resilience, leading these children to prioritize internal coping strategies over effectively seeking support from others.

Problem-solving frequency, problem-solving efficacy, emotional regulation frequency, and emotional regulation efficacy as coping strategies show positive correlations with analysis of emotions (correlation coefficients ranging from 0.251 to 0.391; p-values ranging from 0.001 to 0.030), indicating that increased levels of analysis of

emotions were linked with higher levels of these coping strategies. Finally, there was a positive correlation between the analysis of emotions and social support frequency as a coping strategy (correlation coefficient = 0.246, p-value = 0.033), suggesting that greater capacity of analysis of emotions was connected with higher levels of seeking social support. By analyzing their emotions, children gain valuable insights into the factors contributing to their distress and are better equipped to generate and implement solutions to address these challenges. Moreover, through internal reflection and analysis, children with TDTM learn to identify early signs of emotional distress and employ more frequent and effective emotion regulation strategies to modulate their emotional responses.

Relationship between behavior issues of children with transfusion-dependent TM with various other psychological factors such as level of emotional awareness, depression, general health, family functioning, and coping strategies.

There was a strong positive correlation between internalizing behaviour and the total scores of behavioral issues (correlation coefficient = 0.513, p-value = 0.001), indicating that higher internalizing behavior was associated with higher overall behavioural issues. Our findings were supported by research conducted by Raman V,(2019) [60].

Parental physical functioning in the past month exhibits a negative correlation with internalizing behaviour (correlation coefficient = -0.280, p-value = 0.015), demonstrating that decreased levels of parental physical functioning corresponded with higher levels of internalising conduct in thalassemia children. Similarly, parental emotional functioning (correlation coefficient = -0.292, p-value = 0.011) and social functioning (correlation coefficient = -0.287, p-value = 0.012) in the past month also show negative correlations with internalizing behaviour, indicating that lower levels of parental emotional and social functioning were connected with increased levels of internalizing behavior in their

children. Parenting a child with a chronic illness like TDTM is influenced by their children's internalizing behavior, it is emotionally and physically demanding, often placing significant stress on parents. As a result, parents may experience lower levels of physical, emotional, and social functioning due to the constant caregiving responsibilities, medical management, and concerns about their child's health, experience heightened worry, anxiety, or feelings of helplessness in response to their child's emotional struggles. Witnessing their child's distress may evoke strong emotional reactions in parents, impacting their well-being. Communication in the past month between parents and children also exhibits a negative correlation with internalizing behaviour (correlation coefficient = -0.287, p-value = 0.013), this suggests that improved communication was linked to lower levels of internalising conduct. The findings indicate that children having TDTM who demonstrate internalising behaviours such as anxiety and withdrawal, or depression may inadvertently contribute to changes in parental communication patterns. Parents may adjust their communication style or frequency in response to their child's emotional struggles, When confronted with internalising tendencies, parents may be unsure of how to successfully interact with their child.

Total scores in the previous month and summaries of parents' overall health-related quality of life and family functioning all showed an inverse relationship with internalising behaviour, with correlation coefficients of -0.308 and p-values of 0.007 for each factor, indicating that lower scores on these assessments were correlated with greater instances of internalising behaviour. According to the findings, parents may prioritize their child's necessitate over their well-being, resulting in a lack of self-care activities and a lower overall HQOL. The emotional toll of managing their child's internalizing behaviors may manifest in physical symptoms, emotional symptoms and overall disrupt family dynamics and functioning, leading to increased stress, tension, and conflict within the family.

There was also a positive correlation between internalizing behaviour and depression (correlation coefficient = 0.292, p-value = 0.011), Wishful thinking frequency and efficacy as coping strategies show positive correlations with internalizing behavior, with correlation coefficients of 0.258 (p-value = 0.025) and 0.250 (p-value = 0.043), respectively, indicating that higher levels of wishful thinking frequency and efficacy were related to increased levels of internalizing behaviour. Findings of these variables were supported by the research conducted by Behdani, F.,(2015).[65] The author suggests that greater amounts of internalizing behavior were associated with elevated levels of depression among children with thalassemia compared to their healthy counterparts, with significant disparities observed (P = 0.009).

There was a strong positive correlation between attention problems and externalizing behaviour (correlation coefficient = 0.392, p-value = 0.001), indicating that increased attention problems was associated with higher levels of externalizing behaviour. Similarly, attention problems show a very strong positive correlation with the total scores on behaviour issues (correlation coefficient = 0.748, p-value = 0.001), suggesting that higher attention problems was strongly associated with overall higher levels of behaviour issues. Findings were supported by research conducted by Raman V.,(2019).[60]

Parental physical functioning, emotional functioning, social functioning, cognitive functioning, and communication in the past month all exhibit negative correlations with attention problems, with correlation coefficients ranging from -0.368 to -0.447 and all p-values less than 0.003. Parental worry in the past month also shows a negative correlation with attention problems (correlation coefficient = -0.339, p-value = 0.003). Similarly, family functioning, both in terms of daily activity and family relationships, shows negative correlations with attention problems, with correlation coefficients of -0.350 and -0.345, respectively, and p-values of 0.002. Total scores and summaries of parents' health-related quality of life and family functioning all show

negative correlations with attention problems, with correlation coefficients of -0.479 and p-values of 0.001 for each factor. Social withdrawal efficacy as a coping strategy shows a positive correlation with attention problems, with a correlation coefficient of 0.345 and a p-value of 0.015. Findings suggest that when children with TDTM suffer from attention problems, parents as to put more energy into managing their children's symptoms along with chronic disease which puts significant strains on their physical, social, emotional, and cognitive functioning. They find it difficult to communicate and deal with children suffering in fear that they might say or communicate something which would further increase such symptoms. Parents focus more on their child's needs than self-care decreasing parents ' health-related quality of life and disrupting family functioning.

There was a very strong positive correlation between externalizing behaviour and the total scores on behaviour issues (correlation coefficient = 0.781, p-value = 0.001), indicating that higher levels of externalizing behaviour were strongly linked with overall elevated levels of behaviour issues. Findings were supported by research conducted by Raman V.,(2019).[60]

Parental physical functioning, emotional functioning, social functioning, and cognitive functioning in the past month all exhibit negative correlations with externalizing behaviour, with correlation coefficients ranging from -0.253 to -0.350 and p-values less than 0.030. Family functioning, particularly in terms of family relationships, also shows negative correlations with externalizing behaviour, with a correlation coefficient of -0.295 and a p-value of 0.010. Total scores in the past month and summaries of parents' health-related quality of life and family functioning all show negative correlations with externalizing behaviour, with correlation coefficients of -0.301 and p-values of 0.009 for each factor, indicating that parents who are struggling with their physical health may have limited mobility or endurance to actively engage with their children or enforce boundaries. Similarly, parents who are emotionally distressed or socially isolated may have fewer

resources to address their children's behavioral challenges in constructive ways. Dysfunctional family dynamics, such as inconsistent discipline, poor communication, or inadequate parental supervision along with children's chronic illness, can contribute to the emergence or exacerbation of externalizing behavior in children. Also, parents of children suffering from TDTM experience heightened stress, frustration, and emotional strain when managing their child's externalizing behaviors, which could also adversely affect their physical health, emotional well-being, social interactions, cognitive functioning, family functioning, and overall quality of life.

Cognitive restructuring efficacy as a coping strategy shows a negative correlation with externalizing behaviour, with a correlation coefficient of -0.274 and a p-value of 0.027, indicating that higher efficacy in cognitive restructuring as a coping strategy correlates with decreased levels of externalizing behaviour. Cognitive restructuring involves challenging and modifying maladaptive thought patterns or beliefs, which can influence how individuals perceive and respond to challenging situations. Children with TDTM who struggle with cognitive restructuring may have difficulty regulating their emotions and behaviors, leading to an increased likelihood of externalizing behaviors.

There was a strong negative correlation between the total score on behaviour issues and various aspects of parental functioning in the past month, including physical functioning, emotional functioning, social functioning, and cognitive functioning, with correlation coefficients ranging from -0.401 to -0.498 and all p-values less than 0.001. This suggests that diminished parental functioning in these domains correlated with elevated total scores on behavioral issues in their children. Communication in the past month also shows a negative correlation with the total score on behaviour issues, with a correlation coefficient of -0.374 and a p-value of 0.001, suggesting that lower levels of communication were associated with higher total scores on behaviour issues. Parental worry in the past month exhibits a negative correlation with the total score on behaviour issues, with a correlation

coefficient of -0.263 and a p-value of 0.023. This suggests that elevated levels of parental concern are linked to higher overall scores on behavioral problems. Family functioning, as reflected by daily activities and interpersonal dynamics within the family over the previous month, demonstrates inverse correlations with the total score of behavioral issues., with correlation coefficients of -0.283 and -0.338, respectively, and p-values of 0.014 and 0.003. This implies that diminished family functioning in these domains was linked to increased total scores on behavioral issues. Similarly, the total scores in the past month and summaries of parents' health-related quality of life and family functioning also exhibit negative correlations with the total score on behaviour issues, with correlation coefficients of -0.481 for each factor and p-values less than 0.001.

This indicates that higher scores on these measures were associated with lower total scores on behaviour issues. Parents who experience challenges in communication or perceive lower levels of family functioning may struggle to effectively address and manage their child's behavioral issues or this is also due to behaviour issues in children whose communication patterns are poor. When family functioning is compromised, children may experience greater difficulty in managing their behaviors and emotions, or due to children's behaviour issues their family function is compromised.

Relationship between Coping strategies in children with transfusion-dependent TM and other psychological variables

Parents' emotional functioning in the past month correlates negatively with the frequency of emotional regulation and wishful thinking coping strategies in children with thalassemia, with correlation coefficients of -0.267 ($p = 0.020$) and -0.251 ($p = 0.030$), respectively. The possible reason for such findings was that When parents experience significant improvements in their emotional well-being, it may inadvertently shift the family dynamics in unexpected ways, potentially disrupting established patterns of coping and

communication. It became difficult for children to adjust to new roles as they already had accustomed to assuming a caretaking or supportive role in response to their parents' emotional distress. Priorly if parents had maladaptive coping mechanisms or exhibited high levels of emotional distress, children may have adapted by employing coping strategies such as emotional regulation or wishful thinking to manage their emotional responses. Due to this their improvement in their functioning could partially deteriorate their coping.

Similarly, parents' cognitive functioning in the past month correlates negatively with the efficacy of blaming others coping strategy in children with thalassemia, with a correlation coefficient of -0.359 ($p = 0.020$), This suggests that heightened cognitive functioning in parents correlated with reduced effectiveness of this coping strategy in their children. Parents who have good cognitive functioning in terms of attention and memory model good coping mechanisms leading to their children using blaming others coping strategy. Children of such parents feel heard and attended to.

Parental worry in the past month correlates negatively with the frequency of problem-solving coping strategies in children with thalassemia, with a correlation coefficient of -0.280 ($p = 0.015$), indicating that elevated levels of parental concern were linked to decreased occurrences of problem-solving coping strategies in their children. Family functioning in terms of daily activity and family relationships in the past month correlates negatively with the frequency of emotional regulation coping strategy in children with thalassemia, with correlation coefficients of -0.307 ($p = 0.007$) and -0.367 ($p = 0.017$), respectively. This suggests that diminished family functioning in these domains was linked to increased occurrences of emotional regulation coping strategies in children. Children with thalassemia have a chronic illness that not only affects them but their parents largely. Parents are the sole caregivers and support children in all aspects such as their emotional, physical, academic, social needs, and financial after a point it leads to burnout which results in decreased parental

health-related quality of life and disruption in family functioning. With time children seeing to distress in their parents manage their own emotions disruptions. Additionally, family functioning in terms of family relationships in the past month correlates negatively with the efficacy of blaming others coping strategy and the frequency of wishful thinking coping strategy in children with thalassemia, with correlation coefficients of -0.367 ($p = 0.017$) and -0.270 ($p = 0.019$), respectively. This indicates that when conflicts, tension, and miscommunication between families increase leads to the deterioration of family functioning and strains family relationships thalassemic children learning these behaviour in the form of modeling indulge in blaming others' coping strategy and higher frequencies of wishful thinking coping strategy in children.

Depression correlates positively with the frequency of blaming others' coping strategy in children with transfusion-dependent thalassemia, with a correlation coefficient of 0.241 ($p = 0.038$), and negatively correlates with the efficiency of cognitive restructuring, with a correlation coefficient of -0.244 ($p = 0.050$). This implies that increased levels of depression in these children correlated with a greater tendency to resort to blaming others as a coping mechanism, and their less effective utilization of cognitive restructuring led to heightened levels of depression.

RELATIONSHIP AMONG DIFFERENT STRATEGIES OF COPING IN CHILDREN WITH TRANSFUSION-DEPENDENT TM.

Coping strategy frequency of distractions correlates positively with distraction efficacy in children with transfusion-dependent thalassemia, with a correlation coefficient of 0.414 ($p = 0.001$), indicating that higher frequencies of using distractions as a coping strategy were associated with higher efficacy in managing distractions. Distraction efficacy, in turn, correlates negatively with the frequency of self-criticism, problem-solving, emotional regulation, and wishful thinking coping strategies in children with transfusion-dependent

thalassemia, with correlation coefficients of -0.274 (p = 0.022), -0.331 (p = 0.005), -0.245 (p = 0.041), and -0.271 (p = 0.023), respectively. Distraction effectiveness is the capacity to effectively employ distraction as a coping method. Whenever children are skilled at using distraction, they may be less inclined to engage in other coping strategies such as self-criticism, problem-solving, emotional regulation, or wishful thinking. This could be because distraction serves as a more immediate and accessible way to alleviate distress or discomfort compared to the cognitive effort required for other strategies. Distraction is often considered an avoidance-based coping strategy, focusing on diverting attention away from stressors or negative emotions. In contrast, to other coping mentioned.

However, Distraction efficacy in children with thalassemia correlates positively with resignation efficacy, with a correlation coefficient of 0.304 (p = 0.024), Distraction efficacy and resignation efficacy may share similarities in their underlying mechanisms despite being conceptually different. Both strategies involve a form of disengagement from stressors or difficulties, albeit with different motivations and outcomes. Distraction involves diverting attention away from stressors towards more neutral or positive stimuli, while resignation entails accepting and passively enduring the situation without actively attempting to change it. Children with thalassemia face ongoing challenges and stressors related to their illness, such as medical treatments, limitations in daily activities, and uncertainty about the future. In this context, Distraction and resignation may arise as coping techniques for dealing with their chronic disease. Our findings were similar to research conducted by Ali et al. (2018)[25], which investigated coping strategies utilized by children with thalassemia and found that the most frequently employed coping mechanisms were distraction & avoidance strategies, which are generally considered maladaptive or emotion-focused coping techniques.

Similarly, social withdrawal frequency in children with thalassemia correlates positively with social withdrawal efficacy, with a correlation coefficient of 0.382 (p = 0.007), suggesting that a higher frequency of social withdrawal was associated with higher efficacy in social withdrawal coping strategy. This indicates that cognitive restructuring was not only utilized by these children but was also successful in helping them manage stressors related to their illness.

Cognitive restructuring frequency in children with transfusion-dependent TM correlates positively with cognitive restructuring efficacy (correlation coefficient = 0.636, p = 0.001) and self-criticism frequency (correlation coefficient = 0.254, p = 0.028). This indicates that cognitive restructuring was not only utilized by these children but was also successful in helping them manage stressors related to their illness and indicate that children who engage in cognitive restructuring more often are actively working to challenge and change self-critical thoughts, resulting in a greater awareness of self-criticism frequency. Both Cognitive restructuring frequency and efficacy in children with thalassemia correlate positively with emotional regulation efficacy (correlation coefficient = 0.465 & 0.462, p = 0.001), social support frequency (correlation coefficient = 0.392 & 0.544, p = 0.001 & p = 0.001), social support efficacy (correlation coefficient = 0.333 & 0.581, p = 0.005, & p = 0.001), resignation frequency (correlation coefficient = 0.294 & 0.346, p = 0.010 & p = 0.005), and resignation efficacy (correlation coefficient = 0.344, p = 0.008).

Cognitive restructuring efficacy in children with thalassemia also correlates positively with emotional regulation frequency (correlation coefficient = 0.247 & 0.471, p = 0.047 & p = 0.001), our findings indicate that children who engage in cognitive restructuring more frequently and effectively were also better at regulating their emotions. This suggests that cognitive restructuring may contribute to improved emotional regulation by helping children reframe and reinterpret stressors in more adaptive ways and also tend to seek and receive

more social support or vice versa. This reciprocal interaction emphasizes the relevance of cognitive and interpersonal components in dealing with chronic disease.

Self-criticism frequency in children suffering from transfusion-dependent TM correlates positively with self-criticism efficacy (correlation coefficient = 0.494, p = 0.006), problem-solving frequency (correlation coefficient = 0.263, p = 0.022), emotional regulation frequency (correlation coefficient = 0.381, p = 0.001), social support frequency (correlation coefficient = 0.297, p = 0.010), and resignation frequency (correlation coefficient = 0.293, p = 0.011). The reason for our findings indicates that children who engage in more frequent self-criticism may also attempt to regulate their emotions more often. Individuals may turn to social support as a coping mechanism to alleviate the distress caused by self-criticism. When experiencing feelings of inadequacy, failure, or self-doubt, seeking reassurance, validation, or perspective from others can provide temporary relief and validation of self-worth. Children who engage in more frequent self-criticism may also exhibit higher resignation tendencies. Self-criticism may add to feelings of hopelessness or helplessness, leading to passive acceptance of challenging situations without active attempts to change them.

Self-criticism efficacy in children with thalassemia correlates positively with problem-solving efficacy (correlation coefficient = 0.433, p = 0.017), emotional regulation efficacy (correlation coefficient = 0.386, p = 0.035), wishful thinking efficacy (correlation coefficient = 0.391, p = 0.044), social support frequency (correlation coefficient = 0.429, p = 0.018), social support efficacy (correlation coefficient = 0.509, p = 0.005), and resignation efficacy (correlation coefficient = 0.489, p = 0.011). Findings suggest that a positive correlation between self-criticism efficacy and problem-solving efficacy, emotional regulation efficacy, and wishful thinking efficacy suggests that children who perceive themselves as more effective in self-criticism also tend to perceive themselves as more effective in other coping strategies. This

may indicate a broader pattern of perceived efficacy in managing stressors and challenges associated with thalassemia, regardless of the specific coping approach.

Blaming others frequency in children with transfusion-dependent TM correlates positively with blaming others efficacy (correlation coefficient = 0.345, p = 0.025), problem-solving frequency (correlation coefficient = 0.230, p = 0.047), emotional regulation frequency (correlation coefficient = 0.308, p = 0.007), and wishful thinking frequency (correlation coefficient = 0.309, p = 0.007). Blaming other's efficacy in children with thalassemia correlates positively with resignation efficacy (correlation coefficient = 0.396, p = 0.019). This may reflect a self-reinforcing loop, in which children who regard themselves as adept in blaming others are more likely to use this method at reaction to stresses, leading to increased perceived efficacy over time. The frequency of blaming others may vary depending on the specific context and nature of stressors faced by children with TDTM. They may be more likely to engage in blaming others when experiencing interpersonal conflicts or frustrations related to their illness management. In contrast, they may rely on problem-solving, emotional regulation, or wishful thinking when faced with practical challenges or emotional distress. Also, children who perceive themselves as more effective in blaming others also tend to perceive themselves as more resigned to their circumstances.

Problem-solving frequency in children with transfusion-dependent TM correlates positively with problem-solving efficacy (correlation coefficient = 0.660, p = 0.001) and emotional regulation frequency (correlation coefficient = 0.253, p = 0.029). It also correlates positively with social support frequency (correlation coefficient = 0.247, p = 0.033), showing that children that engage in problem-solving more frequently also tend to regulate their emotions more often. This could imply that problem-solving serves as a proactive coping mechanism that helps children manage emotional distress associated with their illness by addressing underlying stressors or challenges. This

highlights the interconnected nature of coping strategies and social support-seeking behaviors, as problem-solving may prompt children to reach out to others for assistance, advice, or validation in navigating the challenges of living with TDTM.

Emotional regulation frequency in children with thalassemia correlates positively with emotional regulation efficacy (correlation coefficient = 0.469, p = 0.001) and wishful thinking frequency (correlation coefficient = 0.262, p = 0.023). Additionally, Emotional regulation frequency and efficacy correlate positively with social support frequency (correlation coefficient = 0.490 & 0.519, p = 0.001), social support efficacy (correlation coefficient = 0.445 & 0.488, p = 0.001), and resignation frequency (correlation coefficient = 0.337 & 0.426, p = 0.003 & p = 0.001). Emotional regulation efficacy also correlates positively with resignation efficacy (correlation coefficient = 0.468, p = 0.001). The reason for such findings, suggests that emotional regulation was not only a commonly utilized coping strategy among children with thalassemia but also one that they perceive as effective in managing their emotional responses to stressors associated with their illness and wishful thinking serves as an additional coping mechanism alongside emotional regulation, potentially used in situations where the child feels unable to directly influence or change the circumstances. Complementary relationship between emotional regulation and social support-seeking behaviors, as children may use emotional regulation to manage distress while also relying on social support from others for comfort, advice, or validation. while emotional regulation can assist children deal with distressing emotions, persistent challenges associated with thalassemia can result in feelings of resignation or acceptance of their circumstances.

Wishful thinking frequency in children with thalassemia correlates positively with wishful thinking efficacy (correlation coefficient = 0.342, p = 0.005). Wishful thinking efficacy correlates positively with resignation efficacy (correlation coefficient = 0.286, p = 0.040). Wishful

thinking involves imagining desirable outcomes or scenarios that may not be realistic or feasible in reality. When children perceive themselves as effective in wishful thinking, they may be more likely to engage in this coping strategy as a means of temporarily escaping from the distress caused by illness. Wishful thinking can be considered a form of escapism, allowing individuals to temporarily disengage from distressing realities and imagine more favorable outcomes. While wishful thinking may provide short-term relief from stress, it can also reinforce passive coping tendencies and contribute to resignation.

Social support frequency among children with thalassemia demonstrates significant positive correlations with social support efficacy, resignation frequency, and resignation efficacy, with correlation values of 0.870, 0.699, and 0.481, respectively, all with p-values of 0.001. social support efficacy exhibits positive correlations with resignation frequency (correlation coefficient = 0.541, p = 0.001) and resignation efficacy (correlation coefficient = 0.471, p = 0.001). This implies that active interaction with social support networks results in a greater perception of its helpfulness in coping with the challenges associated with thalassemia. On one hand, frequent engagement with social support may reflect a recognition of one's need for assistance and a readiness to reach out for help. On the contrary, children who experience resignation tendencies might turn to social support more frequently as a means of coping with their feelings of acceptance or helplessness. While social support can provide emotional comfort and practical assistance, it may also foster a sense of resignation when children perceive their circumstances as unchangeable despite external assistance.

Additionally, ***resignation frequency in children with thalassemia strongly correlates positively with resignation efficacy,*** with a correlation coefficient of 0.735 and a p-value of 0.001. This suggests a self-reinforcing cycle wherein higher resignation frequency leads to a

greater sense of efficacy in accepting their circumstances, potentially hindering efforts to actively deal with difficulties inked with the illness.

However, there hasn't been much research on the interactions of these characteristics in children with TDTM.

LIMITATION

1. The study may not have controlled for all potential confounding variables that could influence psychological variables in children with TDTM, such as disease severity. Failure to account for these variables could impact the validity of the findings.
2. The size of the sample population is limited, potentially affecting the generalizability of the findings to a broader population.
3. The current research was conducted in a tertiary setting in an urban region of Punjab. This may restrict the study's generalizability to the Indian population.
4. The majority of participants in the Control group were from one school. It may not be generalized to the entire population.
5. The study's age range of 8-16 years excluded the older group diagnosed with TDTM, which might have provided further insight into current factors.
6. The studies may not have adequately considered cultural or contextual factors that could influence studied psychological factors in children with TDTM.

SUMMARY AND CONCLUSION

The current research aims to examine the psychological functioning of children with transfusion-dependent thalassemia, in comparison to that of healthy control. The study seeks to distinguish between the coping strategies, emotional awareness, family functioning, behavioral issues, and depressive symptoms of both groups. The study was conducted at the Thalassemia Day Care Centre located at Dayanand Medical College and Hospital in Ludhiana. The healthy control group was selected from local schools. A total of 225 participants, including 75 with transfusion-dependent thalassemia and 150 healthy controls, all aged between 8-16 years, were enrolled in the research. Before their participation, all individuals' parents provided written consent and completed a socio-demographic questionnaire. Participants were assessed using an emotion awareness questionnaire, general health questionnaire-12, pediatric symptom checklist, PEDSQL™ family impact module, KIDCOPE, and children's depression inventory, for both the experiment and control group. The collected data was then organized and analyzed using the spss software. The data was then analyzed and the following conclusions were drawn:

- The mean age for both groups is 12.37 years. The age group with the highest number of cases in both experimental and healthy control groups is the 16-year-old age group with 13 cases (17.3%) and 26 cases (17.3%) respectively. The age group with the lowest number of cases in both groups is the 13-year-old age group, with 4 cases (5.3%) in the experimental group and 8 cases (5.3%) in the healthy control group.
- For both groups, the female gender has (38.7%) of cases and the male gender has (61.3%) of cases.
- In the experimental group, 30.7% of children are currently attending high school, 32 % are in middle school, and 37.3% are in primary school. On the other hand, in the control group, the majority of children 36% are also in primary school, 29.3% are in middle school, and 34.7% are in high school.

- The experimental group has 70.7% urban participants, but the control group has a significantly higher proportion of urban participants, with 81.3% compared to the experimental group.
- The percentage of participants from joint families is 48% in the experimental group and 46.7% in the control group, while the percentage of participants from nuclear families is 52% in the experimental group and 54% in the control group.
- Both the experimental and control group have the highest number of participants belonging to the upper-middle socio-economic status (experimental: 58.7%; control: 52%) followed by upper socio-economic status (experimental: 25.3%; control: 34.7%), lower-middle socio-economic status is the next most represented category (experimental: 12%; control: 5.3%), and upper-lower socio-economic status (experimental: 2.7%; control: 8%). With the lowest representation in the lower ses category (experimental: 1.3%; control: 0%).
- On average, the yearly pre-transfusion hb level was 9.08 mg/dl, with the lowest level observed being 7.73 mg/dl. Patients required an average of 214.21 ml/kg of packed cell per year, with the lowest requirement being 6.60 ml/kg. Monthly, the mean cost of treatment was 6983.33 rupees, with a minimum of 2000 rupees and a maximum of rupees 30,000 rupees. The average hospital stay was 1.71 days per month, with a minimum of 1 day and a maximum of 4 days. Monthly, the mean travel cost was 1138.51 rupees, with a minimum of 100 rupees and a maximum of 12,000 rupees. On average, patients missed 2.04 days of school per month due to treatment, with the minimum number of missed days being 1 and the maximum being 7. The average duration since diagnosis was 11.39 ± 3.20 years. The minimum time observed from diagnosis was 4 years, and the maximum was 16 years. The mean (SD) age of diagnosis was ±1.16 years.
- Among the cases studied, the majority, comprising 50.7%, stayed in the hospital for 2 days with 38 cases falling into this category.

Following closely behind, 40.0% of cases, a total of 30, stayed only for 1 day. A smaller proportion of cases, 8.0%, stayed for 3 days, amounting to 6 cases, while only 1.3% of cases, a single case, required a 4-day hospitalization.

- Out of all the cases examined, the highest percentage (58.7%) missed 2 days of school per month, which amounts to 44 cases. The second most common category is 1 day of missed school, which accounts for 24.0% of cases, or 18 cases. Only 12.0% of cases, or 9 cases, missed 3 days of school. Furthermore, there were 2 cases (2.7%) that missed 4 days of school, and 1 case (1.3%) each that missed 5 and 7 days of school per month.
- The most prevalent comorbidities among transfusion-dependent TM children are liver iron overload, affecting 36 cases (48.0%), and Osteopenia, with 17 cases (22.7%), and delayed puberty, with 16 cases (21.3%). hypothyroidism, and increased serum ferritin levels which are present in 14 cases (18.7%) each are also relatively common. Followed by myocardial iron overload and osteoporosis were observed in 5 cases (6.7%).
- The most frequently utilized pharmacological treatment is made up of deferasirox (DFX) and deferiprone (DFP), which is utilized in 33 cases (44.0%). Deferasirox (DFX) alone is the second most common treatment with 26 cases (34.7%). Combination therapies involving deferasirox (DFX) with other agents, such as deferoxamine (DFO), hemoglobin inducers, or thyronorm, are also employed but to a lesser extent.
- No significant difference in distraction frequency was found between the two groups.
- Each group exhibited notable variances, with a heightened frequency of social withdrawal and diminished effectiveness in its management.
- In comparing cognitive restructuring coping strategies, the experimental and control groups showed no difference in frequency. However, the control group had a higher proportion of participants

reporting higher effectiveness levels.

- There are statistically significant differences between the groups in terms of self-criticism levels. A higher percentage of participants in the experimental group reported lower levels of self-criticism frequency. While a higher percentage of participants in the control group reported higher effectiveness of self-criticism.
- The groups had similar levels of blaming others coping style, as seen in the frequency and effectiveness tables.
- There is no noticeable difference in the frequency of problem-solving between the control and experimental groups. However, the control group exhibits higher levels of problem-solving effectiveness.
- There is no statistically significant difference between the experimental and control groups in terms of the frequency and effectiveness of the emotional regulation coping strategy.
- The frequency of wishful thinking is similar between the experimental and control groups, but there's a significant variation in its effectiveness. Overall, the participants of the experimental group were less effective at wishful thinking.
- There is no statistically significant difference between the experimental and control groups in terms of the frequency and effectiveness of seeking social support as a coping strategy.
- There is no statistically significant difference between the experimental and control groups in terms of the frequency and effectiveness of resignation coping strategy.
- The experimental group scored lower in differentiating emotions, sharing emotions, acting out, bodily awareness, and attending to others. However, both groups were similar when it came to analyzing emotions.
- The participants in the experimental group demonstrated notably elevated scores on the general health questionnaire than the control group.
- For the internalizing subscale, the TM group had a higher average

score than the healthy group, indicating a trend toward significance.

- Children with TM had a lower mean attention score than the healthy control group (p-value = 0.210), indicating no substantial distinction between the two groups.
- There is no significant disparity between the two groups in terms of externalizing symptoms.
- The total score of behavioral issues had no substantial difference in groups.
- The results of the investigation reveal that the TM group had significantly lower mean scores in physical, emotional, social, cognitive, and communication functions, in comparison to the control group. The TM group also reported significantly higher levels of worry than the control group.
- Overall, the parents with children of transfusion-dependent TM had significantly lower total mean scores, and Parents reported much worse health-related quality of life than the individuals in the control subgroup. Furthermore, parents of children with transfusion-dependent TM showed considerably weaker family functioning than parents in the control sample on average. There was a statistically significant distinction in family impact and health-related quality of life between the two groups.
- The TM group has a significantly higher mean depression score compared to the control.
- There is a significant negative correlation (coefficient = -0.191) between children's age, parents' physical function, and family functioning in the past month.
- Age was found to have moderate to strong positive correlations with the utilization and effectiveness of coping strategies such as cognitive restructuring, emotional regulation efficacy, social support frequency and effectiveness, and resignation.
- There is a strong positive correlation between duration since diagnosis and the efficiency of cognitive restructuring and emotional regulation as coping strategies.

- There is a significant positive correlation between time since diagnosis and both the frequency and effectiveness of social support, suggesting an increased reliance on seeking social support over time.
- Moreover, there is a positive correlation between the frequency of using resignation as a coping strategy and the time since diagnosis.
- The mean pre-transfusion hemoglobin level in children with transfusion-dependent TM shows a moderate negative correlation with internalizing symptoms.
- The physical function of parents in the past month demonstrates a moderate positive correlation with the mean pre-transfusion hemoglobin level in TM children.
- The social function of parents in the past month also exhibits a moderate positive correlation with the mean pre-transfusion hemoglobin level in TM children.
- The average requirement of hemoglobin (Hb) is positively correlated with the verbal sharing of emotions.
- The cost of treatment for children with transfusion-dependent TM correlates positively with attending to others.
- There is a negative correlation between the cost of treatment and parents' social function in the past month, parental worry in the past month, and family functioning in terms of family relationships in the past month.
- The time spent in the hospital by children with TM shows various correlations with their emotional and behavioral factors. There is a moderately positive correlation between the time spent in the hospital and the tendency to engage in acting-out behaviors. There is a moderately negative correlation between the time spent in the hospital and the efficacy of distractions as a coping strategy. There is a strong negative correlation between the time spent in the hospital and the efficacy of self-criticism as a coping strategy.
- The cost of travel is positively correlated with the ability to differentiate emotions among individuals with transfusion-

dependent TM. Specifically, there is a moderate positive correlation between the cost of travel and the capacity to distinguish between different emotions.

- There is a moderate positive correlation between missed school days and the tendency to exhibit acting-out behaviors. Additionally, parents' worry in the past month shows a moderate negative correlation with the number of missed school days. Furthermore, blaming others as a coping strategy is negatively correlated with its efficacy.
- There is a positive correlation between differentiating emotions and verbal sharing of emotions, acting out behaviors, bodily awareness, attending to others, analysis of emotions, and general health (GHQ-12) scores.
- Parents' physical and emotional functioning in the past month is negatively correlated with differentiating emotions. Parents' cognitive functioning and communication with their children are negatively correlated with differentiating emotions. Moreover, family functioning aspects such as daily activity, family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month show negative correlations with differentiating emotions.
- Regarding coping strategies, the frequency of emotional regulation shows a positive relationship with differentiating emotions. Similarly, the frequency of wishful thinking also exhibits a positive link with differentiating emotions.
- There is a positive correlation between verbal sharing of emotions and bodily awareness as well as attending to others. Regarding coping strategies, the efficacy of self-criticism and problem-solving shows positive correlations with verbal sharing of emotions.
- Parents' cognitive functioning in the past month is negatively correlated with verbal sharing of emotions. Similarly, parental worry in the past month also shows a negative correlation with verbal sharing of emotions. Additionally, family functioning aspects such as

family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month exhibit negative correlations with verbal sharing of emotions.

- Verbal sharing of emotion is positively correlated with the level of depression in children with TDTM correlation coefficients.
- There is a positive correlation between acting out behavior and bodily awareness, attending to others, and analysis of emotions.
- Parents' physical functioning in the past month exhibits a negative correlation with acting out behavior. Similarly, parents' emotional functioning in the past month also shows a negative correlation with acting out behavior.
- There is a negative correlation between acting out behavior and distraction efficacy. Conversely, there is a positive correlation between acting out behavior and social withdrawal frequency. Additionally, acting out behavior shows positive correlations with the frequency of cognitive restructuring, self-criticism, emotional regulation, and resignation.
- There is a strong positive correlation between bodily awareness and attending to others. Bodily awareness also exhibits a positive correlation with externalizing behavior. Parents' physical functioning in the past month shows a inverse relation with bodily awareness. There is a positive association between bodily awareness and problem-solving efficacy.
- Bodily awareness in children with TDTM positively relates to the level of depression.
- There is a strong positive correlation between attending to others' emotions and analysis of emotions. Attending to others' emotions also exhibits positive correlations with externalizing behavior (correlation coefficient = 0.245, p-value = 0.034) and the total score of behavioral issues.
- Parents' social functioning, cognitive functioning, and communication in the past month show negative correlations with

attending to others' emotions. Among family functioning factors, there are negative correlations between attending to others' emotions and family functioning daily activity, family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month.

- Attending to others' emotions correlates with problem-solving efficacy as a coping strategy.
- There is a positive relationship between analysis of emotions and internalizing behavior. Parents' communication in the past month shows a negative correlation with analysis of emotions. Among family functioning factors, there are negative correlations between analysis of emotions and family relationships, total scores, parents' health-related quality of life (HRQL) summary, and family functioning summary scores in the past month.
- Analysis of emotions demonstrates a positive link with distraction frequency as a coping strategy.
- There is a negative correlation between the analysis of emotions and social withdrawal efficacy as a coping strategy. Problem-solving frequency, problem-solving efficacy, emotional regulation frequency, and emotional regulation efficacy as coping strategies correlates with the analysis of emotions. Finally, there is a positive link between the analysis of emotions and social support frequency as a coping strategy.
- There is a positive correlation between GHQ-12 scores and externalizing behavior as well as the total score of behavioral issues. Parental physical functioning in the past month shows a negative correlation with GHQ-12 scores. Wishful thinking frequency as a coping strategy exhibits a positive correlation with GHQ-12 scores.
- There is a strong positive correlation between internalizing behaviour and the total scores of behavioral issues.
- Parental physical functioning in the past month exhibits a negative correlation with internalizing behaviour. Similarly, parental emotional

functioning and social functioning in the past month also show negative correlations with internalizing behaviour. Communication in the past month between parents and children also exhibits a negative correlation with internalizing behaviour. Total scores in the past month and summaries of parents' health-related quality of life and family functioning all show negative correlations with internalizing behaviour.

- There is also a positive correlation between internalizing behaviour and depression.
- Wishful thinking frequency and efficacy as coping strategies show positive correlations with internalizing behavior.
- There is a strong positive correlation between attention problems and externalizing behaviour. Similarly, attention problems show a very strong positive correlation with the total scores on behaviour issues.
- Parental physical functioning, emotional functioning, social functioning, cognitive functioning, and communication in the past month all exhibit negative correlations with attention problems. Parental worry was inversely related to attention problems. Similarly, family daily activity and relationships, show negative correlations with attention problems. Total scores in the past month and summaries of parents' health-related quality of life and family functioning all show negative correlations with attention problems.
- Social withdrawal efficacy as a coping strategy demonstrates a positive relation with attention problems.
- There is a very strong positive correlation between externalizing behaviour and the total scores on behaviour issues.
- Parental physical functioning, emotional functioning, social functioning, and cognitive functioning in the past month all exhibit negative correlations with externalizing behaviour. Family functioning, particularly in terms of family relationships, also shows negative correlations with externalizing behaviour. Total scores in the past month and summaries of parents' health-related quality of

life and family functioning all show negative correlations with externalizing behaviour.

- Cognitive restructuring efficacy correlate inversely with externalizing behaviour.
- A significant negative association exists between the total score on behavioural difficulties and various aspects of parental functioning in the past month, including physical, emotional, social, and cognitive functioning. Communication in the past month also shows a negative correlation with the total score on behaviour issues. Parental worry in the past month exhibits a negative correlation with the total score on behaviour issues. Family functioning, as indicated by daily activity and family relationships in the past month, shows negative correlations with the total score on behaviour issues. Similarly, the total scores in the past month and summaries of parents' health-related quality of life and family functioning also exhibit negative correlations with the total score on behaviour issues.
- Parents' emotional functioning in the past month correlates negatively with the frequency of emotional regulation and wishful thinking coping strategies in children with thalassemia. Similarly, parents' cognitive functioning in the past month correlates negatively with the efficacy of blaming others coping strategy in children with thalassemia. Parental worry in the past month correlates negatively with the frequency of problem-solving coping strategy in children with thalassemia. Family functioning in terms of daily activity and family relationships in the past month correlates negatively with the frequency of emotional regulation coping strategies in children with thalassemia.
- Additionally, family functioning in terms of family relationships in the past month correlates negatively with the efficacy of blaming others' coping strategy and the frequency of wishful thinking coping strategy in children with thalassemia.
- Depression positively correlates with the frequency of blaming

others' coping strategy in children with transfusion-dependent thalassemia and negatively correlates with the efficiency of cognitive restructuring, with a correlation coefficient.

- Coping strategy frequency of distractions correlates positively with distraction efficacy in children with transfusion-dependent thalassemia, distraction efficacy, in turn, correlates negatively with the frequency of self-criticism, problem-solving, emotional regulation, and wishful thinking coping strategies in children with transfusion-dependent thalassemia. However, distraction efficacy in children with thalassemia correlates positively with resignation efficacy. Similarly, social withdrawal frequency in children with thalassemia correlates positively with social withdrawal efficacy.
- Cognitive restructuring frequency in children with transfusion-dependent tm correlates positively with cognitive restructuring efficacy and self-criticism frequency. Both cognitive restructuring frequency and efficacy in children with thalassemia correlate positively with emotional regulation efficacy, social support frequency, social support efficacy, resignation frequency, and resignation efficacy. Cognitive restructuring efficacy in children with thalassemia also correlates positively with emotional regulation frequency.
- Self-criticism frequency in children with transfusion-dependent TM correlates positively with self-criticism efficacy, problem-solving frequency, emotional regulation frequency, social support frequency, and resignation frequency.
- Self-criticism efficacy in children with thalassemia correlates positively with problem-solving efficacy, emotional regulation efficacy, wishful thinking efficacy, social support frequency, social support efficacy, and resignation efficacy.
- Blaming others frequency in children with transfusion-dependent TM correlates positively with blaming others efficacy, problem-solving frequency, emotional regulation frequency, and wishful

thinking frequency. Blaming others' efficacy in children with thalassemia correlates positively with resignation efficacy.

- Problem-solving frequency in children with transfusion-dependent TM correlates positively with problem-solving efficacy and emotional regulation frequency. It also correlates positively with social support frequency.
- Emotional regulation frequency in children with thalassemia correlates positively with emotional regulation efficacy and wishful thinking frequency. Additionally, emotional regulation frequency and efficacy correlate positively with social support frequency, social support efficacy, and resignation frequency. Emotional regulation efficacy also correlates positively with resignation efficacy.
- Wishful thinking frequency in children with thalassemia correlates positively with wishful thinking. Wishful thinking efficacy correlates positively with resignation efficacy.
- Children with thalassemia had a substantial positive association between social support frequency, social support efficacy, and resignation frequency/efficacy. Similarly, social support efficacy is positively related to resignation frequency (correlation coefficient = 0.541, $p = 0.001$) and resignation efficacy.
- Resignation frequency in children with thalassemia strongly correlates positively with resignation efficacy.

To conclude, the comprehensive analysis of various factors related to transfusion-dependent thalassemia (TDTM) and its impact on children, their families, and coping strategies camper reveals several significant correlations and findings. Notably, there is a diverse range of correlations observed between demographic factors, treatment parameters, psychological factors, coping strategies, and parental functioning. Children with TDTM tend to experience a range of psychosocial challenges, including internalizing and externalizing behaviors, which are influenced by various factors such as age, duration since diagnosis, parental functioning, and family dynamics.

Coping strategies employed by these children show both positive and negative associations with their psychological well-being, with certain strategies being more effective than others. Furthermore, parental functioning, particularly in terms of emotional and social aspects, plays a crucial role in shaping the coping mechanisms and overall adjustment of children with TDTM. These findings underscore the complex interplay of factors involved in the psychosocial well-being of children with TDTM and highlight the importance of holistic interventions that address both individual and familial aspects to promote better outcomes for these children.

FUTURE DIRECTIONS

The existing data assess and contrast various psychological factors between children with transfusion-dependent thalassemia and healthy controls. A more comprehensive understanding could be gained by incorporating additional variables such as socio-cultural factors, maternal age, education, income, birth order of the child, age of initiating iron chelation therapy, transfusion delays, treatment accessibility in other provinces, and other types of thalassemia. Future studies should employ population-based longitudinal designs to investigate the impact of therapeutic interventions on coping strategies, emotional awareness, behavioral issues, and family functioning in these children. Exploration of lower socio-economic status populations could illuminate their influence on these variables. Gender-specific analyses could distinguish parental health-related quality of life and perceived family functioning. Moreover, examining changes in family function and quality of life over shorter time frames is warranted. Further granularity in assessing children's depression could involve analyzing specific domains and their associations with other variables. Finally, Analyzing comparisons based on gender and increasing the sample size could provide valuable perspectives.

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SOCIO-DEMOGRAPHIC PROFORMA

S.NO: - **Date:**

1. NAME:

2. AGE:

3. SEX: - Male/ Female

4. MRD.NO: -

5. Education-

a) Illiterate b) primary school c) Middle school d) High school
e) Intermediate/Diploma f) Graduate g) Professional degree

6. Occupation-

a) Farmer/Clerical/Shopkeeper b) Semi-skilled/skilled worker
c) Unemployed d) Semi-professional
e) Professional f) Student
g) Other

7. Address- a) Urban b) Rural

8. Family Type- a) Nuclear b) Joint

9. Education of the Head of Family

Profession or honors
Graduate
Intermediate or diploma
High school certificate
Middle school certificate
Primary school certificate
Illiterate

10. Occupation of the head of the family

Legislators, senior officials, and managers
Professional
Technicians and associate professionals
Clerks
Skilled workers and shop and market sales workers
Skilled agricultural and fishery workers
Plant and machine operators and assemblers
Craft and related trade workers
Elementary occupation
Unemployed

11. Monthly income of the family

≥20,482
10,241–20,481
7681–10,240
5120–7680
3072–5119
1034–3071
≤1033

Signature of Candidate **Signature of Supervisor**

12. Socio economic status

Upper Lower middle Lower
Upper middle Upper lower

13. Diagnosis:

14. Time since diagnosis:

15Pharmacological treatment:

16. Mean pre-transfusion HB:

17. Average requirement of transfusion:

18. Presence of comorbidities:

19. Cost of treatment per month:

20. Time spent in hospital:

21. Cost of travel:

22. Number of missed school days:

23. SCALES:

1. **Emotion Awareness Questionnaire** **SCORES=**

   Differentiating Emotions:

   Verbal Sharing of Emotions:

   Not Hiding Emotions:

   Bodily Awareness:

   Attending to Others' Emotions:

   Analyses of Emotions

2. **General Health Questionnaire-12** **SCORES=**

3. **Pediatric Symptom Checklist** **SCORES=**

   Internalizing behaviours

   Externalizing behaviours

4. **PedsQL™ Family Impact Module** **SCORES=**

   Physical Functioning

   Emotional Functioning

   Social Functioning

   Cognitive Functioning

   Communication

Signature of Candidate **Signature of Supervisor**

Worry

Family functioning

Daily Activities

Family Relationships

5. Kidcope **SCORES=**

Distraction

Social withdrawal

Wishful thinking

Self-criticism

Blaming others

Problem-solving

Emotional regulation

Cognitive restructuring

Social support

Resignation

6. Children's Depression Inventory **SCORES=**

CONTACT NO.

Signature of Candidate **Signature of Supervisor**

S.no.	Name		Age	Sex	MRD	Education	Address	Family Type	SES	Diagnosis	Diagnosis Age	Time since Diagnosis	Pharmacological Treatment	Mean pre-transfusion HB	Average Requirement HB	Comorbidities	Cost of treatment	Time Spent in Hospital	Cost of Travel
1	A.S	cases	14	M	55896	Middle	Rural	Joint	UPPER-MIDDLE CLASS	TDT	3	11	DFX/DFP	9.7	43	Severe blood iron overload	4000	1	1000
2	A	cases	8	F	483053	Primary school	Urban	Nuclear	UPPER-CLASS	TDT	1	7	DFX	9.93	270	none	30000	2	12000
3	A.A	cases	15	M	22698	High	Urban	Joint	LOWER-MIDDLE CLASS	TDT	0	15	DFX	7.8	232	moderate liver I.O., osteopenia, minimal hearing loss	6000	3	500
4	A.S	cases	15	M	107771	High	Rural	Joint	UPPER-MIDDLE CLASS	TDT	0.7	14.3	DFX/DFP	9	169	Hypothyroidism, severe liver I.O.,delayed puberty	3000	2	300
5	A	cases	14	F	109786	High	Urban	Joint	UPPER-MIDDLE CLASS	TDT	1	13	DFX/Hb inducer	9.1	175	none	4000	2	500
6	AJ	cases	13	M	112079	Middle	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	1	12	DFX/DFP	8	248	Moderate liver & myocardial iron overload	10000	2	400
7	A	cases	16	F	1573120	High	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0.5	15.5	DFX/DFP	7.73	6.6	hypothyroidism, delayed puberty, severe liver iron overload, myocardial, osteoporosis	25000	3	3000
8	AN	cases	15	M	124844	High	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	0	15	DFX/DFP	9.1	258	Moderate liver iron overload, osteoporosis	4000	1	200
9	A.K.B	cases	16	M	131128	High	Urban	Joint	LOWER-MIDDLE CLASS	TDT	1	15	DFX/DFP	8.73	245	LIGHT liver iron overload	2500	2	500
10	AJ	cases	11	M	111485	Middle	Urban	Nuclear	UPPER-CLASS	TDT	0	11	DFX/DFP	9.1	256	blood iron overload, light liver I.O	4000	1	
11	A	cases	9	F	1182799	Primary school	Urban	Joint	UPPER-MIDDLE CLASS	TDT	5	4	DFX	8.2	218	hypothyroidism	9000	2	600
12	AK	cases	15	M	21058	Middle	Urban	Joint	UPPER-MIDDLE CLASS	TDT	0.6	14.4	DFX	10.1	215	delayed puberty, mild to moderate liver I.O., osteopenia	15000	1	3000
13	E.K	cases	11	F	1212421	Middle	Urban	Joint	UPPER-MIDDLE CLASS	TDT	3	8	DFX/Hb inducer	9.3	306	Hypothyroidism, blood I.O., Moderate liver I.O., Osteopenia	5000	2	200
14	G.K	cases	8	F	106721	Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	1	7	DFX	9.1	226	none	5000	2	1200
15	G	cases	10	M	136209	Primary school	Urban	Joint	UPPER-CLASS	TDT	0	10	DFX/DFP	9.9	236	Hypocalcemia, severe liver iron overload	10000	1	3000
16	G.S	cases	14	M	54979	Middle	Urban	Joint	UPPER-CLASS	TDT	0	14	DFX/Hb inducer	8.7	222	delayed puberty, blood I.O., Osteopenia	5000	2	1000
17	GD	cases	8	M	538753	Middle	Urban	Nuclear	UPPER-CLASS	TDT	1	7	DFX	9.8	218	none	5000	1	1000
18	G	cases	11	M	612350	Middle	Urban	Joint	UPPER-MIDDLE CLASS	TDT	5	6	DFX/Hb inducer	8.36	51	Severe liver i.o., osteopenia, minimal hearing loss	10000	1	3000
19	H.S	cases	10	M	105260	Primary school	Rural	Joint	UPPER-MIDDLE CLASS	TDT	0.5	9.5	DFX/DFP	9	284	light liver iron overload	5000	1	1500
20	H.S	cases	12	M	40493	Middle	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	2	10	DFX	9	230	liver iron overload	3000	1	150
21	H.K	cases	8	M	394657	Primary school	Urban	Joint	LOWER-MIDDLE CLASS	TDT	2	6	DFX/DFP	9.2	303	none	3000	2	200
22	H.S	cases	16	M	111417	High	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0	16	DFX	8.233	223	hypothyroidism, light liver iron overload, osteoporosis	3000	2	200
23	ID	cases	16	M	128582	High	Rural	Joint	UPPER-MIDDLE CLASS	TDT	0	16	DFX/DFP	8.5	198	delayed puberty	7000	2	500
24	I.K	cases	16	F	487023	High	Urban	Joint	UPPER-CLASS	TDT	0.5	15.5	DFX/DFP	9.2	35.5	blood iron overload, hepatitis C, severe liver iron overload	15000	1	500
25	I	cases	16	F	114886	High	Urban	Joint	UPPER-MIDDLE CLASS	TDT	0.5	15.5	DFX/Hb Inducer	9.3	179	none	8000	2	600
26	J.K	cases	16	F	165761	High	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	2	14	DFX/DFP	7.9	273	blood & severe myocardial I.O, hypothyroidism,	20000	3	5000
27	J.M	cases	8	F	447375	Primary school	Urban	Nuclear	UPPER-CLASS	TDT	1	7	DFX/thyronorm	8.1	215	hypothyroidism	2000	1	1000
28	K.S	cases	14	M	77434	High	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	0	14	DFX/DFP	8.8	244	Hypothyroidism, moderate liver I.O.,delayed puberty	5000	2	600
29	KV	cases	8	M	121480	Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0	8	DFX/DFP	9.5	291	none	5000	2	200
30	K	cases	12	F	1371330	Middle	Urban	Nuclear	LOWER-MIDDLE CLASS	TDT	1	11	DFX/Hb Inducer	10	48	liver iron overload, delayed puberty	8000	2	200
31	K	cases	16	M	1343300	High	Urban	Joint	UPPER-MIDDLE CLASS	TDT	3	13	DFX	8.7	142	liver iron overload, delayed puberty	6000	2	300
32	K.K	cases	11	F	137159	Primary school	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	0.3	10.7	DFX	9.6	258	Liver I.O, osteopenia	8000	3	500
33	K	cases	10	F	193774	Primary school	Urban	Joint	UPPER-CLASS	TDT	1	9	DFX	9.8	227	hypothyroidism, osteopenia, delayed growth	5000	2	700
34	K.M	cases	16	M	23080	High	Urban	Nuclear	UPPER-CLASS	TDT	1	15	DFX/DFP	8.9	176	liver iron overload	6000	1	2000
35	K.S	cases	10	M	28076	Primary school	Rural	Joint	UPPER-MIDDLE CLASS	TDT	0.6	9.4	DFX/DFP	10.2	240	none	5000	2	1500
36	L	cases	12	M	347772	Middle	Urban	Joint	UPPER-CLASS	TDT	0.5	11.5	DFX	9.6	14	blood I.O, osteopenia	3000	2	1000

S.no.	Name	Missed School days	EMOTION AWARENESS QUESTIONNAIRE	Differentiating emotions	Verbal Sharing of Emotions	Acting out	Bodily Awareness	Attending to Others	Analysis of emotions	GHQ-12	Pediatric Symtoms Checklist	Internalizing	Attention	Externalizing	Total	PeadsQL Family Impact Module	Physical_PAST 1 M	Emotional_PAST 1 M	Social_PAST 1 M	Cognitive_PAST 1 M
1	A.S	1		4	2	4	1	3	6	12		1	2	0	3		450	375	300	375
2	A	2		4	2	4	4	4	5	8		0	1	2	3		575	375	300	475
3	A.A	3		7	4	7	2	5	5	28		5	8	7	20		175	100	0	75
4	A.S	2		5	0	0	1	5	5	12		0	0	0	0		450	500	400	500
5	A	2		9	4	8	8	6	10	11		4	0	0	4		450	175	375	500
6	AJ	2		5	2	4	4	6	3	12		3	3	0	6		250	175	25	150
7	A	3		5	3	6	5	4	6	10		2	1	2	5		325	350	350	375
8	AN	3		2	0	8	2	2	2	8		2	2	4	8		400	200	400	500
9	A.K.B	2		10	3	7	4	5	4	14		3	1	2	6		325	275	350	425
10	AJ	2		1	2	0	1	1	5	21		2	3	1	6		550	500	375	475
11	A	2		0	0	2	0	4	7	19		2	4	5	11		350	250	375	500
12	AK	2		8	2	5	4	4	4	20		1	2	4	7		375	275	225	375
13	E.K	2		11	4	6	5	6	5	12		2	3	7	12		100	100	200	200
14	G.K	2		5	1	0	2	2	4	13		3	3	1	7		300	300	150	175
15	G	1		7	4	3	4	7	6	15		2	3	3	8		550	175	375	400
16	G.S	2		4	1	6	4	5	5	12		2	0	5	7		375	250	275	400
17	GD	1		7	3	4	2	6	9	20		4	1	1	6		400	325	300	375
18	G	3		8	0	5	2	4	7	16		2	4	2	8		325	225	175	400
19	H.S	1		6	4	2	5	6	8	16		1	2	4	7		425	300	275	250
20	H.S	1		2	3	4	3	4	1	10		1	1	2	4		400	450	400	450
21	H.K	2		0	4	6	2	4	6	6		2	1	1	4		475	400	400	300
22	H.S	2		2	2	3	6	6	2	14		1	3	4	8		400	400	250	425
23	ID	2		4	1	6	4	5	5	8		2	2	1	5		400	475	325	450
24	I.K	1		2	3	0	8	6	6	19		5	5	4	14		300	225	200	200
25	I	2		3	3	6	2	7	5	11		3	6	2	11		450	350	300	375
26	J.K	3		2	2	2	2	2	2	5		2	2	1	5		575	300	350	500
27	J.M	1		0	0	2	4	1	1	5		1	4	0	5		400	300	250	500
28	K.S	2		5	2	6	4	5	8	11		3	2	3	8		425	400	200	400
29	KV	2		1	5	2	7	6	4	16		0	2	5	7		450	450	425	475
30	K	2		7	2	5	3	7	6	11		2	1	3	6		400	0	100	500
31	K	2		4	2	2	1	5	9	10		3	1	1	5		375	325	125	400
32	K.K	3		9	3	7	4	5	4	13		0	0	0	0		400	450	400	400
33	K	2		7	1	5	2	3	4	12		0	1	1	2		525	275	225	350
34	K.M	1		8	2	0	2	4	9	11		2	0	1	3		425	325	275	275
35	K.S	2		1	1	3	2	0	1	5		0	1	0	1		575	500	375	500
36	L	2		8	3	7	3	3	7	9		2	2	2	6		350	250	400	475

S.no.	Name	Communication_ PAST 1 M	Worry_P AST 1 M	Daily Activity	Family Relationships	TOTAL SCORES_P AST 1 M	PARENTS HRQL SUMMARY _PAST 1 M	FAMILY FUNCTIONING SUMMARY SCORES_PAST 1 M	CDI	KIDCOPE	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E
1	A.S	225	375	225	375	75	135	337.5	47		2	3	0		2	3	0		0	
2	A	250	250	250	450	81.25	146.25	365.625	44		2	1	0		1	2	0		1	0
3	A.A	0	125	0	0	13.19444	23.75	59.375	54		3	1	0		0		2	1	1	2
4	A.S	300	425	225	500	91.66667	165	412.5	39		2	4	0		2	3	0		0	
5	A	275	350	200	500	78.47222	141.25	353.125	66		3	1	0		3	4	3	4	1	1
6	AJ	150	75	25	450	36.11111	65	162.5	42		1	1	1	2	1	2	3	1	0	
7	A	275	150	200	350	65.97222	118.75	296.875	66		2	3	1	2	1	1	0		1	2
8	AN	275	0	200	500	68.75	123.75	309.375	54		3	4	2	2	2	2	0		0	
9	A.K.B	225	325	200	275	66.66667	120	300	60		2	1	1	1	0		0		2	0
10	AJ	250	200	200	500	84.72222	152.5	381.25	68		1	1	2	3	0		1	1	1	0
11	A	300	425	300	450	81.94444	147.5	368.75	42		2	4	0		1	2	0		0	
12	AK	225	325	200	350	65.27778	117.5	293.75	41		2	3	1	2	1	2	2	1	1	1
13	E.K	175	150	150	325	38.88889	70	175	54		2	3	1	2	1	1	0		1	1
14	G.K	125	225	200	425	52.77778	95	237.5	46		2	3	0		1	2	0		1	0
15	G	50	100	200	325	60.41667	108.75	271.875	49		2	3	0		1	1	1	2	0	
16	G.S	250	450	225	500	75.69444	136.25	340.625	47		1	1	1	1	1	1	0		1	1
17	GD	225	300	175	375	68.75	123.75	309.375	54		2	2	1	1	2	2	1	1	2	2
18	G	75	0	100	400	47.22222	85	212.5	48		2	2	1	1	1	1	0		0	
19	H.S	150	225	275	400	63.88889	115	287.5	45		2	4	1	1	1	1	0		1	1
20	H.S	300	325	275	450	84.72222	152.5	381.25	44		1	2	0		2	3	1	3	2	2
21	H.K	100	375	300	400	76.38889	137.5	343.75	5		2	3	1	1	1	2	0		1	1
22	H.S	300	425	300	450	81.94444	147.5	368.75	45		1	2	2	3	2	3	1	0	0	
23	ID	275	250	250	475	80.55556	145	362.5	37		1	3	2	2	1	3	2	2	1	1
24	I.K	75	50	175	175	38.88889	70	175	62		1	4	0		0		0		3	3
25	I	200	300	225	325	70.13889	126.25	315.625	55		1	1	3	3	1	2	0		1	1
26	J.K	250	0	275	500	76.38889	137.5	343.75	55		1	2	2	2	0		0		0	
27	J.M	275	250	300	475	76.38889	137.5	343.75	40		2	3	2	3	0		0		0	
28	K.S	200	375	200	375	71.52778	128.75	321.875	39		1	0	2	0	1	2	1	0	0	
29	KV	350	375	250	350	86.80556	156.25	390.625	75		1	2	0		1	0	0		0	
30	K	300	200	200	400	58.33333	105	262.5	46		1	1	1	1	1	0	0		1	0
31	K	125	325	150	300	59.02778	106.25	265.625	51		2	1	0		2	2	0		0	
32	K.K	300	200	250	350	76.38889	137.5	343.75	46		1	1	2	1	1	2	0		1	0
33	K	125	350	100	425	65.97222	118.75	296.875	40		1	2	3	3	2	3	0		0	
34	K.M	200	350	225	375	68.05556	122.5	306.25	37		2	4	1	0	1	2	0		0	
35	K.S	275	150	300	450	86.80556	156.25	390.625	67		1	1	2	1	1	1	0		1	1
36	L	225	225	225	375	70.13889	126.25	315.625	41		2	3	1	1	1	1	0		1	1

S.no.	Name	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
1	A.S	1	2	2	3	1	2	2	3	2	3
2	A	2	3	1	4	2	0	1	2	1	0
3	A.A	2	3	3	0	3	2	3	4	3	1
4	A.S	0		2	4	0		3	4	1	4
5	A	3	4	3	4	2	3	3	4	3	4
6	AJ	2	2	2	2	2	2	1	2	0	
7	A	2	3	1	3	2	2	1	2	2	3
8	AN	2	1	1	2	2	2	3	3	3	3
9	A.K.B	2	2	2	1	3	0	3	4	1	0
10	AJ	2	1	2	2	1	1	1	0	1	1
11	A	0		1	2	0		1	2	1	2
12	AK	1	2	2	3	2	3	1	1	2	3
13	E.K	2	4	2	1	2	2	1	2	0	
14	G.K	1	2	2	2	2	2	1	2	0	
15	G	1	2	2	1	2	2	1	2	1	0
16	G.S	2	2	1	1	2	2	1	1	1	1
17	GD	1	1	2	2	1	1	3	2	4	3
18	G	2	3	2	1	2	0	0		0	
19	H.S	2	3	1	1	1	1	1	1	1	1
20	H.S	2	3	2	3	2	2	2	3	2	3
21	H.K	2	4	1	2	0		1	2	1	2
22	H.S	2	3	1	2	1	0	1	2	1	1
23	ID	2	2	2	2	1	1	2	3	3	4
24	I.K	3	3	2	3	3	2	3	4	2	3
25	I	2	3	1	1	1	1	2	2	1	1
26	J.K	2	3	2	3	1	1	3	4	3	4
27	J.M	2	2	1	1	1	1	1	2	1	2
28	K.S	2	2	2	3	2	2	2	2	1	1
29	KV	0		1	0	2	0	1	2	1	0
30	K	2	3	2	1	2	3	1	2	1	1
31	K	3	3	2	2	2	3	2	3	3	3
32	K.K	1	2	2	2	2	2	1	2	1	0
33	K	1	3	3	4	3	0	3	4	3	4
34	K.M	2	4	1	2	2	2	1	2	0	
35	K.S	2	2	2	2	1	1	1	2	1	0
36	L	1	1	1	2	2	3	1	1	0	

S.no.	Name		Age	Sex	MRD	Education	Address	Family Type	SES	Diagnosis	Diagnosis Age	Time since Diagnosis	Pharmacological Treatment	Mean pre-transfusion HB	Average Requirement HB	Comorbidities	Cost of treatment	Time Spent in Hospital	Cost of Travel
37	M.T	cases	10	M	20619	Primary school	Urban	Joint	LOWER-MIDDLE CLASS	TDT	1	9	DFX/DFP	9.85	300	blood & severe liver i.o, delayed growth	3000	2	400
38	M.K	cases	10	F	479655	Primary school	Rural	Joint	UPPER-MIDDLE CLASS	TDT	4	6	DFX	9	250	blood iron overload	8000	1	2000
39	N.S	cases	12	M	114840	High	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	0	12	DFX/Hb inducer	8.9	281	Severe liver i.o., & osteopenia	7000	1	1200
40	N.V	cases	15	M	129349	High	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0	15	DFX	8.9	216	Hypothyroidism, osteopenia, moderate liver I.O., Hypocalcemia, delayed puberty	26000	1	1000
41	NP	cases	16	M	23482	Primary school	Urban	Joint	UPPER-CLASS	TDT	0	16	DFX/DFP	9.5	192	osteopenia, light liver iron overload	5000	2	1000
42	N.A	cases	9	F	1070035	Primary school	Urban	Nuclear	UPPER-CLASS	TDT	3	6	DFX	8.7	252	blood iron overload	5000	1	200
43	N	cases	14	M	411528	Middle	Urban	Joint	UPPER-MIDDLE CLASS	TDT	1	13	DFX/DFP	8.3	226	liver iron overload, osteoprosis	7000	1	1200
44	P.S	cases	12	M	36253	Middle	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	0.6	11.4	DFX/Hb inducer	10.3	265	osteopenia	4000	2	600
45	P	cases	15	F	119028	Middle	Urban	Joint	UPPER-MIDDLE CLASS	TDT	1	14	DFO/DFX	9.5	185	Hypothyroidism, blood Iron overload., Osteopenia	5000	2	400
46	R	cases	10	F	784873	Middle	Urban	Nuclear	UPPER-CLASS	TDT	3	7	DFX	10.3	242	blood iron overload, increased size of liver and spleen	3000	2	500
47	R	cases	14	F	20081	Middle	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0.9	13.1	DFX/DFP	9.5	236	Hypothyroidism	8000	2	700
48	R	cases	14	F	109173	Middle	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0.6	13.4	DFX/DFP	9	175	hypothyroidism, blood I.O., Severe liver I.O, mild myocardial I.O., Osteopenia	4000	3	2000
49	RD	cases	15	F	112278	High	Urban	Nuclear	LOWER-MIDDLE CLASS	TDT	1	14	DFX/DFP	9.1	220	Delayed puberty, osteopenia, hepatitis C, light liver I.O.,	6000	2	600
50	R.K	cases	9	F	629866	Primary school	Urban	Joint	LOWER-MIDDLE CLASS	TDT	0	9	DFX/Hb inducer	8.3	231	none	5000	2	700
51	RV	cases	8	F	448675	Primary school	Urban	Nuclear	UPPER-CLASS	TDT	0	8	DFX	9.4	235	none	8000	1	2000
52	R.N	cases	16	M	243923	High	Urban	Nuclear	UPPER-CLASS	TDT	0.8	15.2	DFX	8.7	235	light liver I.O, osteopenia	5000	1	200
53	R.K	cases	13	M	464506	Middle	Rural	Joint	UPPER-LOWER CLASS	TDT	1	12	DFX/DFP	9.05	270	light liver iron overload, osteopenia, anti-HCV +	6000	2	1000
54	R.S	cases	12	M	1352714	Primary school	Rural	Joint	UPPER-MIDDLE CLASS	TDT	1	11	DFX/Hb Inducer	7.8	215	none	10000	1	700
55	R.K	cases	11	F	1360790	Primary school	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	3	8	DFX/Hb inducer	8.5	120	delayed puberty	5000	1	100
56	R	cases	15	M	36957	High	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	1	14	DFX/DFP	9.4	127	osteoporosis	3000	2	500
57	S.M	cases	14	F	129184	Middle	Urban	Joint	UPPER-MIDDLE CLASS	TDT	1	13	DFX	9.3	167	none	8000	2	5000
58	S.A	cases	13	M	194653	Middle	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0	13	DFX/DFP	8.1	273	Blood I.O., Moderate liver iron overload, delayed puberty	5000	2	1000
59	S	cases	9	M	112409	Primary school	Rural	Joint	UPPER-LOWER CLASS	TDT	0	9	DFX	10	246	none	4000	1	800
60	S.S	cases	12	M	26571	Middle	Urban	Joint	UPPER-MIDDLE CLASS	TDT	0	12	DFX/DFP	10.3	262	light liver iron overload, & delayed puberty	3000	1	200
61	SJ	cases	14	M	46510	Middle	Rural	Nuclear	LOWER-MIDDLE CLASS	TDT	2	12	DFX/Hb inducer	9.8	125	Hypothyriodism	5000	1	3000
62	S.B	cases	16	M	108617	High	Urban	Nuclear	UPPER-CLASS	TDT	0	16	DFX/Hb inducer	8.8	220	Osteopenia	10000	2	500
63	S.S	cases	16	M	1531031	High	Rural	Joint	UPPER-MIDDLE CLASS	TDT	0.4	15.6	DFX/DFP	9.1	62	Moderate myocardial & liver iron overload, osteopenia, Hepatitis-C	2250	4	2700
64	S	cases	13	M	114321	Primary school	Urban	Joint	LOWER-MIDDLE CLASS	TDT	1.3	11.7	DFX	9.2	255	Delayed puberty	4000	2	400
65	S	cases	15	M	64219	High	Rural	Nuclear	UPPER-MIDDLE CLASS	TDT	0	15	DFX	8.9	238	light liver overload, osteopenia	7000	3	150
66	S	cases	8	F	377150	Primary school	Urban	Joint	UPPER-MIDDLE CLASS	TDT	0	8	DFX	9.2	272	none	7000	2	1000
67	S	cases	15	M	268436	High	Urban	Nuclear	LOWER-CLASS	TDT	1	14	DFX/DFP	8.4	293	delayed puberty, Severe liver I.O.	6000	1	200
68	S	cases	9	M	146069	Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0	9	DFX	9.4	218	Increased creatinine level, eye fundus, light liver iron overload	15000	2	200
69	S	cases	10	F	518503	Primary school	Urban	Nuclear	UPPER-CLASS	TDT	0	10	DFX	8.7	214	LIGHT liver iron overload	4000	2	500
70	T	cases	8	F	582615	Primary school	Rural	Joint	UPPER-MIDDLE CLASS	TDT	0.6	7.4	DFX/DFP	8.5	230	none	5000	1	400
71	TK	cases	8	F	118433	Primary school	Urban	Nuclear	UPPER-CLASS	TDT	0	8	DFX	9	222	none	8000	2	1000
72	V	cases	15	F	98859	Middle	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0.3	14.7	DFX/DFP	8.7	222	none	10000	1	1000
73	V	cases	8	M	166831	Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	0.3	7.7	DFX/DFP	9.8	275	none	3000	1	500
74	V.S	cases	15	M	713253	Middle	Urban	Joint	UPPER-CLASS	TDT	3	12	DFX/Hb inducer	9.3	364	Osteopenia, Severe liver I.O., Moderate myocardial I.O.	7000	1	550
75	V	cases	10	M	97327	Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS	TDT	1	9	DFX/DFP	9.6	260	none	4000	1	100

S.no.	Name	Missed School days	EMOTION AWARENESS QUESTIONNAIRE	Differentiating emotions	Verbal Sharing of Emotions	Acting out	Bodily Awareness	Attending to Others	Analysis of emotions	GHQ-12	Pediatric Symtoms Checklist	Internalizing	Attention	Externalizing	Total	PeadsQL Family Impact Module	Physical_PAST 1 M	Emotional_PAST 1 M	Social_PAST 1 M	Cognitive_PAST 1 M
37	M.T	2		4	3	2	0	3	4	9		1	4	1	6		575	525	400	500
38	M.K	2		4	4	2	4	8	2	5		0	0	1	1		500	500	400	500
39	N.S	2		5	1	8	2	6	8	15		2	2	1	5		10	32	0	20
40	N.V	1		6	2	4	1	8	7	8		2	3	1	6		325	300	150	100
41	NP	2		4	2	7	3	6	7	5		1	3	0	4		375	350	325	350
42	N.A	1		7	2	9	8	4	6	13		2	1	2	5		325	375	375	450
43	N	2		5	0	2	2	5	4	12		1	1	0	2		475	425	350	425
44	P.S	2		9	3	9	7	6	9	21		0	3	3	6		250	100	50	250
45	P	2		3	1	0	3	4	6	12		3	4	4	11		350	350	300	375
46	R	2		8	2	0	0	5	7	12		0	2	0	2		425	375	400	450
47	R	2		7	3	4	4	6	10	13		1	2	1	4		400	325	400	500
48	R	3		7	2	4	7	5	4	14		0	2	1	3		275	275	325	450
49	RD	2		7	2	4	5	7	9	7		1	3	4	8		175	75	100	200
50	R.K	2		9	2	6	6	6	4	9		0	8	8	16		175	100	50	100
51	RV	2		10	5	2	7	8	9	6		5	6	6	17		475	400	300	325
52	R.N	1		1	2	4	4	3	5	9		0	4	0	4		275	150	175	350
53	R.K	2		4	1	5	5	3	4	8		2	1	1	4		225	300	250	375
54	R.S	2		3	3	2	3	5	4	18		4	2	3	9		350	275	100	275
55	R.K	2		1	2	3	1	0	1	5		1	0	1	2		525	500	400	500
56	R	2		3	4	5	2	4	5	11		1	3	1	5		375	300	375	375
57	S.M	2		6	0	3	6	5	8	12		1	0	4	5		600	400	225	450
58	S.A	2		5	2	6	2	6	7	9		1	1	0	2		500	425	300	500
59	S	5		7	3	3	5	6	5	12		2	0	1	3		450	350	350	425
60	S.S	1		4	1	0	3	3	5	17		0	6	2	8		400	200	400	200
61	SJ	1		3	1	0	1	2	5	12		0	1	2	3		450	350	350	500
62	S.B	2		7	1	3	7	7	6	10		0	2	4	6		425	350	325	450
63	S.S	4		4	4	9	3	5	6	11		0	1	2	3		450	375	375	250
64	S	7		4	6	2	4	6	5	4		0	8	8	16		225	200	200	75
65	S	3		4	4	4	2	4	10	3		2	5	4	11		275	100	125	250
66	S	2		11	4	5	6	8	8	16		6	5	5	16		200	125	0	100
67	S	3		2	4	2	4	2	4	6		1	1	2	4		250	325	225	450
68	S	2		0	0	10	2	5	10	16		1	5	4	10		475	500	350	500
69	S	4		5	0	1	1	2	3	5		3	3	2	8		425	225	300	500
70	T	1		8	4	1	4	3	1	17		2	3	5	10		225	200	200	275
71	TK	2		2	2	1	1	4	2	6		0	2	1	3		600	375	175	425
72	V	1		5	0	1	2	4	4	9		0	2	3	5		450	375	300	275
73	V	1		2	2	1	4	2	0	13		1	2	1	4		400	350	125	325
74	V.S	1		7	3	9	3	3	4	14		1	1	3	5		375	150	475	525
75	V	1		2	0	2	4	4	0	5		1	1	2	4		575	500	375	475

S.no.	Name	Communication_ PAST 1 M	Worry_P AST 1 M	Daily Activity	Family Relationships	TOTAL SCORES_P AST 1 M	PARENTS HRQL SUMMARY _PAST 1 M	FAMILY FUNCTIONING SUMMARY SCORES_PAST 1 M	CDI	KIDCOPE	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E
37	M.T	300	300	250	450	91.66667	165	412.5	60		2	4	1	2	1	1	1	0	1	1
38	M.K	300	275	200	350	84.02778	151.25	378.125	53		2	4	1	1	1	1	0		0	
39	N.S	0	16	8	0	2.388889	4.3	10.75	46		2	2	0		3	3	3	2	0	
40	N.V	100	25	50	175	34.02778	61.25	153.125	41		1	1	2	2	3	3	2	2	3	3
41	NP	250	350	150	500	73.61111	132.5	331.25	41		2	4	2	3	3	3	1	1	0	
42	N.A	300	450	275	475	84.02778	151.25	378.125	49		2	2	2	1	1	2	0		1	1
43	N	300	500	200	400	85.41667	153.75	384.375	39		1	2	1	2	1	3	0		0	
44	P.S	75	150	275	50	33.33333	60	150	57		3	2	3	0	1	3	2	3	2	1
45	P	225	350	225	375	70.83333	127.5	318.75	47		2	3	0		2	3	0		1	2
46	R	225	225	225	375	75	135	337.5	37		2	2	0		1	1	0		0	
47	R	275	325	175	400	77.77778	140	350	57		0		0		2	1	1	2	1	1
48	R	225	200	200	300	62.5	112.5	281.25	49		1	2	1	2	2	3	1	0	1	0
49	RD	75	0	0	25	18.05556	32.5	81.25	34		2	1	0		1	3	0		0	
50	R.K	25	125	25	350	26.38889	47.5	118.75	43		0		1	1	1	1	1	0	1	0
51	RV	0	50	0	0	43.05556	77.5	193.75	44		1	1	1	0	0		1	2	0	
52	R.N	225	275	175	375	55.55556	100	250	42		3	3	3	2	1	2	0		0	
53	R.K	100	225	200	325	55.55556	100	250	**50**		1	1	2	3	1	1	1	0	1	2
54	R.S	175	275	150	300	52.77778	95	237.5	60		2	3	2	2	1	1	0		1	1
55	R.K	300	375	300	500	94.44444	170	425	81		2	1	1	1	1	2	1	0	1	0
56	R	225	325	175	325	68.75	123.75	309.375	47		1	2	0		2	3	0		0	
57	S.M	300	400	300	500	88.19444	158.75	396.875	57		3	2	0		1	2	1	0	2	1
58	S.A	225	300	175	500	81.25	146.25	365.625	39		2	2	1	0	1	1	1	2	1	0
59	S	250	200	300	450	77.08333	138.75	346.875	41		1	1	2	1	1	2	0		0	
60	S.S	250	400	300	500	73.61111	132.5	331.25	3		2	4	0		0		0		1	1
61	SJ	250	300	150	500	79.16667	142.5	356.25	37		0		1	2	1	1	1	2	2	1
62	S.B	200	375	150	450	75.69444	136.25	340.625	**50**		2	2	2	1	1	2	1	0	1	1
63	S.S	225	250	125	400	68.05556	122.5	306.25	41		2	3	2	1	1	1	0		1	1
64	S	175	150	25	225	35.41667	63.75	159.375	37		2	3	0		1	1	0		0	
65	S	100	100	100	250	36.11111	65	162.5	41		0		0		3	3	0		0	
66	S	75	125	100	300	28.47222	51.25	128.125	65		2	2	2	4	1	1	1	1	1	1
67	S	200	0	275	500	61.80556	111.25	278.125	64		2	3	1	2	2	2	2	3	0	
68	S	250	325	250	350	83.33333	150	375	38		2	2	1	1	1	1	0		1	1
69	S	200	350	200	500	75	135	337.5	**47**		2	3	2	4	1	1	0		1	0
70	T	250	125	100	400	49.30556	88.75	221.875	53		2	4	0		0		0		0	
71	TK	50	325	150	200	63.88889	115	287.5	40		1	1	0		0		0		1	2
72	V	225	325	200	375	70.13889	126.25	315.625	38		1	3	0		1	2	0		0	
73	V	75	300	150	375	58.33333	105	262.5	46		2	4	0		1	2	0		0	
74	V.S	375	400	500	300	86.11111	155	387.5	36		0		3	2	3	3	2	3	0	
75	V	300	225	300	450	88.88889	160	400	73		1	1	1	1	1	1	1	2	0	

S.no.	Name	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
37	M.T	1	0	1	1	2	3	0		0	
38	M.K	2	3	1	1	1	1	1	2	0	
39	N.S	3	4	3	4	0		3	3	3	3
40	N.V	2	3	3	3	3	2	3	4	1	0
41	NP	1	2	2	3	0		2	3	1	2
42	N.A	1	2	2	3	2	0	1	2	0	
43	N	1	1	0		0		0		0	
44	P.S	3	3	3	3	3	3	3	4	2	2
45	P	1	2	2	3	1	2	2	3	2	3
46	R	2	2	2	1	2	1	1	2	0	
47	R	2	3	3	4	2	1	3	4	2	4
48	R	2	2	2	3	1	2	2	3	1	1
49	RD	1	2	2	3	2	1	3	4	2	3
50	R.K	2	3	2	2	1	0	1	1	1	1
51	RV	2	4	2	2	2	4	1	2	0	
52	R.N	1	2	3	4	1	3	2	3	1	2
53	R.K	1	1	1	1	2	2	1	1	1	1
54	R.S	1	0	2	3	2	3	0		1	1
55	R.K	1	1	2	0	1	0	1	1	1	1
56	R	1	2	2	3	2	2	3	4	1	2
57	S.M	3	3	3	4	3	2	3	4	2	2
58	S.A	1	2	2	4	2	2	2	4	2	2
59	S	2	4	1	2	2	3	1	1	1	2
60	S.S	1	2	2	1	1	1	1	2	0	
61	SJ	2	3	2	3	2	3	3	4	2	2
62	S.B	2	3	2	3	1	0	3	3	2	1
63	S.S	2	3	3	3	0		2	2	1	0
64	S	1	2	1	2	0		1	2	1	2
65	S	3	4	2	3	1	0	2	3	0	
66	S	2	3	2	4	2	4	1	1	1	2
67	S	2	3	1	3	1	1	3	3	1	1
68	S	2	2	2	4	2	3	1	1	1	1
69	S	2	2	2	2	2	3	1	1	1	1
70	T	0		1	1	2	2	1	2	1	1
71	TK	2	2	1	2	2	2	1	2	0	
72	V	1	2	0		1	4	3	4	3	4
73	V	1	1	0		2	1	1	2	1	1
74	V.S	2	2	2	4	3	4	3	4	3	4
75	V	2	4	1	2	0		1	2	0	

S.no.	Name		Age	Sex	MRD	Education	Address	Family Type	SES	Diagnosis	Diagnosis Age	Time since Diagnosis	Pharmacological Treatment	Mean pre-transfusion HB	Average Requirement HB	Comorbidities	Cost of treatment	Time Spent in Hospital	Cost of Travel	Missed School days	EMOTION AWARENESS QUESTIONNAIRE
1	A	control	8	M		Primary school	Urban	Joint	UPPER-MIDDLE CLASS												
2	YD	control	8	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
3	N	control	8	F		Primary school	Rural	Joint	UPPER-MIDDLE CLASS												
4	N	control	8	F		Middle	Rural	Nuclear	UPPER-LOWER CLASS												
5	S	control	8	F		Primary school	Urban	Nuclear	UPPER-CLASS												
6	R	control	8	M		Primary school	Urban	Joint	UPPER-MIDDLE CLASS												
7	HN	control	8	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
8	N	control	8	F		Primary school	Rural	Joint	UPPER-CLASS												
9	S.K	control	8	F		Primary school	Rural	Joint	UPPER-MIDDLE CLASS												
10	G.M	control	8	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
11	S.K	control	8	F		Primary school	Rural	Joint	UPPER-CLASS												
12	S	control	8	F		Primary school	Rural	Joint	UPPER-MIDDLE CLASS												
13	J	control	8	F		Primary school	Rural	Joint	UPPER-MIDDLE CLASS												
14	S.J	control	8	F		Primary school	Urban	Nuclear	UPPER-CLASS												
15	J.K	control	8	F		Primary school	Urban	Joint	UPPER-CLASS												
16	A.K	control	8	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
17	N.T	control	8	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
18	H	control	8	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
19	D	control	8	M		Primary school	Urban	Joint	UPPER-CLASS												
20	A	control	8	M		Primary school	Rural	Nuclear	UPPER-CLASS												
21	A	control	8	F		Primary school	Urban	Joint	UPPER-CLASS												
22	R.A	control	8	M		Primary school	Urban	Nuclear	UPPER-CLASS												
23	J.S	control	9	M		Primary school	Urban	Nuclear	UPPER-CLASS												
24	K	control	9	M		Primary school	Urban	Joint	UPPER-MIDDLE CLASS												
25	AL	control	9	F		Primary school	Rural	Nuclear	UPPER-MIDDLE CLASS												
26	R	control	9	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
27	G	control	9	F		Primary school	Urban	Nuclear	UPPER-CLASS												
28	V	control	9	F		Primary school	Urban	Nuclear	UPPER-CLASS												
29	M	control	9	M		Primary school	Urban	Joint	UPPER-MIDDLE CLASS												
30	PR	control	9	M		Primary school	Urban	Joint	UPPER-CLASS												
31	S	control	9	F		Primary school	Urban	Joint	UPPER-MIDDLE CLASS												
32	J.S	control	9	F		Primary school	Rural	Joint	LOWER-MIDDLE CLASS												
33	A.S	control	10	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
34	R.S	control	10	M		Primary school	Rural	Nuclear	UPPER-CLASS												
35	M	control	10	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
36	P	control	10	F		Primary school	Urban	Joint	UPPER-CLASS												
37	YN	control	10	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
38	A	control	10	M		Primary school	Urban	Nuclear	UPPER-CLASS												
39	P	control	10	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
40	H.S	control	10	M		Primary school	Rural	Joint	UPPER-MIDDLE CLASS												
41	YV	control	10	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
42	A.S	control	10	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
43	D.R.S	control	10	M		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
44	G	control	10	F		Primary school	Urban	Nuclear	UPPER-CLASS												
45	A	control	10	F		Primary school	Rural	Joint	UPPER-MIDDLE CLASS												
46	P	control	10	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
47	S.K	control	10	F		Middle	Rural	Joint	UPPER-MIDDLE CLASS												
48	KN	control	10	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
49	Y	control	10	M		Primary school	Urban	Joint	UPPER-CLASS												
50	T.M	control	10	F		Primary school	Urban	Nuclear	UPPER-CLASS												
51	A	control	11	M		Middle	Urban	Nuclear	UPPER-CLASS												
52	G.K	control	11	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
53	BJ	control	11	F		Primary school	Urban	Nuclear	UPPER-CLASS												
54	I	control	11	F		Primary school	Urban	Joint	UPPER-MIDDLE CLASS												
55	S	control	11	F		Primary school	Urban	Nuclear	UPPER-MIDDLE CLASS												
56	S	control	11	F		Middle	Urban	Joint	UPPER-MIDDLE CLASS												
57	RD	control	11	M		Middle	Urban	Joint	UPPER-CLASS												
58	G.K	control	11	F		Middle	Urban	Joint	UPPER-CLASS												
59	P	control	11	M		Middle	Urban	Nuclear	UPPER-MIDDLE CLASS												
60	S	control	13	M		Primary school	Urban	Nuclear	UPPER-CLASS												
61	L	control	12	M		Middle	Urban	Nuclear	UPPER-MIDDLE CLASS												
62	ED	control	12	M		Middle	Urban	Joint	UPPER-MIDDLE CLASS												
63	P.K	control	12	M		Middle	Urban	Nuclear	UPPER-MIDDLE CLASS												
64	J.S	control	12	M		Middle	Urban	Joint	UPPER-MIDDLE CLASS												
65	V.S	control	12	M		Middle	Urban	Nuclear	UPPER-MIDDLE CLASS												
66	R	control	12	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												

S.no.	Name	Differentiating emotions	Verbal Sharing of Emotions	Acting out	Bodily Awareness	Attending to Others	Analysis of emotions	GHQ-12	Pediatric Symtoms Checklist	Internalizing	Attention	Externalizing	Total	PeadsQL Family Impact Module	Physical_PAST 1 M	Emotional_PAST 1 M	Social_PAST 1 M	Cognitive_PAST 1 M	Communication_PAST 1 M	Worry_PAST 1 M	Daily Activity	Family Relationships	TOTAL SCORES_PAST 1 M	PARENTS HRQL SUMMARY_PAST 1 M
1	A	2	1	3	2	5	2	4		2	1	0	3		425	400	375	450	300	450	300	475	88.19444	158.75
2	YD	7	3	5	5	5	5	4		0	0	0	0		600	475	375	500	300	450	300	500	97.22222	175
3	N	3	2	3	2	4	3	0		3	1	4	8		550	450	350	500	275	500	250	500	93.75	168.75
4	N	3	2	2	5	4	6	10		0	0	0	0		425	375	375	425	300	500	300	350	84.72222	152.5
5	S	5	2	4	5	7	7	12		2	0	1	3		575	500	275	500	250	400	225	400	86.80556	156.25
6	R	5	2	4	7	7	4	5		6	3	3	12		600	425	400	450	250	475	300	450	93.05556	167.5
7	HN	2	3	5	1	2	2	2		0	3	1	4		575	450	400	500	250	350	250	450	89.58333	161.25
8	N	8	4	7	6	5	6	0		0	2	1	3		300	350	400	500	250	500	275	500	85.41667	153.75
9	S.K	5	2	2	2	3	1	4		1	2	1	4		575	475	400	500	300	400	300	475	95.13889	171.25
10	G.M	7	0	2	2	3	1	0		3	1	4	8		525	500	375	475	300	400	275	500	93.05556	167.5
11	S.K	8	3	8	5	3	8	2		0	4	3	7		550	425	350	500	275	400	300	475	90.97222	163.75
12	S	13	4	10	4	5	7	9		2	3	0	5		550	475	400	475	300	375	275	500	93.05556	167.5
13	J	8	2	4	4	3	4	2		3	4	5	12		600	425	400	375	300	400	275	450	89.58333	161.25
14	S.J	5	4	4	3	5	8	9		0	6	6	12		350	450	300	300	175	300	300	450	72.91667	131.25
15	J.K	1	3	1	0	6	8	5		0	1	2	3		550	350	400	450	250	500	300	450	90.27778	162.5
16	A.K	6	4	4	3	5	6	7		0	5	5	10		425	300	325	475	300	500	175	475	82.63889	148.75
17	N.T	2	0	6	2	5	4	0		0	2	1	3		600	500	350	500	250	500	300	450	95.83333	172.5
18	H	9	2	2	7	4	5	13		3	4	3	10		425	425	250	500	250	500	300	450	86.11111	155
19	D	7	3	8	7	8	3	18		0	1	4	5		475	425	200	450	300	500	300	500	87.5	157.5
20	A	2	3	1	3	6	4	0		0	0	2	2		575	450	400	500	275	500	225	450	93.75	168.75
21	A	4	3	6	2	6	3	7		0	0	0	0		550	450	375	500	300	500	300	475	95.83333	172.5
22	R.A	2	3	2	4	1	2	7		0	0	0	0		600	500	400	500	300	500	300	500	100	180
23	J.S	7	2	0	2	5	10	7		0	2	0	2		575	450	400	500	300	500	300	450	96.52778	173.75
24	K	7	4	10	1	6	4	12		0	6	0	6		375	225	250	250	275	500	175	300	65.27778	117.5
25	AL	11	2	6	3	4	7	4		2	6	0	8		475	450	375	500	300	500	300	475	93.75	168.75
26	R	2	4	3	4	2	6	0		1	4	1	6		525	375	375	500	300	450	275	500	91.66667	165
27	G	8	3	10	6	5	8	5		0	0	2	2		450	450	375	400	250	450	275	500	87.5	157.5
28	V	5	2	7	7	5	7	2		1	2	0	3		475	375	375	500	275	450	300	425	88.19444	158.75
29	M	1	1	0	0	0	0	0		1	2	0	3		450	475	375	400	300	500	275	425	88.88889	160
30	PR	1	0	4	0	2	2	4		1	3	4	8		500	325	400	500	300	400	300	450	88.19444	158.75
31	S	9	4	5	9	7	7	5		0	0	0	0		600	500	400	500	300	500	300	500	100	180
32	J.S	3	3	5	3	6	7	5		2	2	0	4		525	500	375	475	300	425	275	500	93.75	168.75
33	A.S	7	4	5	4	5	6	6		0	0	0	0		600	450	400	500	300	500	300	425	96.52778	173.75
34	R.S	4	2	2	4	4	4	5		2	5	3	10		600	500	350	500	275	425	225	475	93.05556	167.5
35	M	5	4	7	5	6	7	9		2	6	0	8		550	450	375	425	300	425	300	450	90.97222	163.75
36	P	4	3	6	2	6	3	4		2	2	3	7		525	450	375	475	300	400	300	450	90.97222	163.75
37	YN	5	2	7	5	3	4	5		2	4	2	8		475	325	350	400	200	450	300	375	79.86111	143.75
38	A	1	2	4	1	4	6	3		1	1	2	4		550	375	250	500	250	450	250	425	84.72222	152.5
39	P	10	3	8	6	6	8	2		2	2	2	6		400	450	400	475	300	450	250	425	87.5	157.5
40	H.S	2	1	4	2	3	4	7		2	2	2	6		475	425	325	425	300	450	300	450	87.5	157.5
41	YV	0	0	0	1	0	2	1		0	0	0	0		550	475	400	500	275	400	200	475	90.97222	163.75
42	A.S	6	1	2	6	5	5	3		0	0	0	0		525	500	375	475	300	425	275	475	93.05556	167.5
43	D.R.S	9	2	0	0	6	6	11		1	6	8	15		400	250	200	425	300	450	300	500	78.47222	141.25
44	G	6	0	2	3	2	1	0		4	1	3	8		525	475	375	450	300	400	300	500	92.36111	166.25
45	A	3	1	5	3	4	3	3		1	1	2	4		500	475	400	450	275	425	300	450	90.97222	163.75
46	P	4	4	5	2	6	3	6		1	1	3	5		525	400	350	450	200	425	250	425	84.02778	151.25
47	S.K	6	1	2	4	3	6	12		1	2	0	3		375	375	350	475	300	350	300	500	84.02778	151.25
48	KN	11	6	6	4	6	8	19		2	2	0	4		525	300	400	500	300	425	300	425	88.19444	158.75
49	Y	9	2	6	4	3	2	1		1	5	1	7		500	350	375	400	300	500	250	500	88.19444	158.75
50	T.M	7	4	5	4	5	6	5		0	0	0	0		600	450	400	500	300	500	300	425	96.52778	173.75
51	A	5	5	5	5	5	5	12		0	0	0	0		525	500	375	500	250	500	300	500	95.83333	172.5
52	G.K	4	3	6	2	6	3	4		0	1	0	1		375	450	325	450	300	475	300	425	86.11111	155
53	BJ	5	2	7	5	3	4	7		0	0	0	0		525	550	375	450	300	400	300	425	92.36111	166.25
54	I	8	4	4	4	4	4	2		1	1	2	4		425	400	300	475	300	425	300	425	84.72222	152.5
55	S	4	4	5	2	6	3	7		1	4	1	6		500	425	375	450	250	475	300	450	89.58333	161.25
56	S	9	5	9	9	8	8	9		0	0	1	1		400	400	400	500	300	500	300	500	91.66667	165
57	RD	2	2	0	4	8	10	3		0	1	0	1		600	500	400	500	250	500	300	500	98.61111	177.5
58	G.K	6	3	6	4	6	8	19		1	4	1	6		550	350	400	450	175	500	300	450	88.19444	158.75
59	P	6	1	2	2	6	3	14		1	5	5	11		375	400	400	400	300	500	300	400	85.41667	153.75
60	S	6	2	5	3	5	5	13		2	5	3	10		600	500	400	500	300	500	300	500	100	180
61	L	9	4	5	9	7	7	5		3	4	3	10		600	500	400	500	300	500	300	500	100	180
62	ED	2	3	7	4	6	7	5		4	6	4	14		600	500	400	500	300	500	300	500	100	180
63	P.K	8	3	3	1	6	6	6		0	0	0	0		600	500	400	500	300	500	300	500	100	180
64	J.S	5	4	3	4	7	3	7		0	0	0	0		600	500	400	500	300	500	300	500	100	180
65	V.S	8	4	8	2	6	8	1		2	2	2	6		375	400	400	400	300	500	300	400	85.41667	153.75
66	R	7	2	8	4	6	8	12		3	8	8	19		550	350	400	450	175	500	300	500	89.58333	161.25

S.no.	Name	FAMILY FUNCTIONING SUMMARY SCORES_PAST 1 M	CDI	KIDCOPE	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
1	A	396.875	38		1	1	1	1	0		0		0		1	1	2	2	0		1	1	0	
2	YD	437.5	46		2	3	1	1	1	2	1	1	1	1	2	3	1	1	2	2	1	0	1	1
3	N	421.875	37		2	0	2	1	1	1	0		0		2	3	1	1	1	1	1	2	0	
4	N	381.25	43		2	3	1	1	1	2	0		0		0		1	1	2	1	2	3	2	2
5	S	390.625	37		2	0	1	0	1	0	1	1	0		2	0	1	1	1	1	1	2	0	
6	R	418.75	35		2	0	1	0	1	0	1	1	0		2	0	1	1	1	1	1	2	0	
7	HN	403.125	35		1	2	1	1	0		1	1	1	1	1	2	1	1	1	1	0		1	0
8	N	384.375	37		2	3	2	3	1	1	1	1	1	1	2	3	2	2	2	3	1	1	1	1
9	S.K	428.125	37		2	0	1	0	1	0	1	1	0		2	0	1	1	1	1	1	2	0	
10	G.M	418.75	37		2	3	0		1	1	1	1	0		1	0	1	2	0		1	1	0	
11	S.K	409.375	37		0		2	4	0		1	1	0		2	3	1	1	2	3	1	2	0	
12	S	418.75	37		2	3	2	3	1	2	1	0	1	1	2	4	2	3	2	4	1	2	1	1
13	J	403.125	37		1	1	1	2	0		0		1	1	1	1	1	1	2	1	2	0		
14	S.J	328.125	37		2	2	0		1	1	0		0		1	0	1	0	1	1	0		1	2
15	J.K	406.25	40		1	1	0		1	1	0		0		2	4	2	3	1	2	1	2	0	
16	A.K	371.875	60		2	1	1	1	0		0		0		2	0	1	1	1	1	0		1	1
17	N.T	431.25	58		0		2	3	0		1	1	0		1	2	1	2	0		1	2	0	
18	H	387.5	1		1	2	2	4	0		0		1	2	1	2	0		2	4	1	2	1	2
19	D	393.75	35		2	2	2	3	1	1	1	2	1	1	2	3	2	3	2	3	1	1	1	2
20	A	421.875	53		0		1	1	1	1	0		1	1	1	1	2	3	0		1	1	0	
21	A	431.25	37		1	1	0		1	1	0		0		2	4	2	3	1	2	1	2	0	
22	R.A	450	6		1	1	0		1	2	1	1	0		2	2	2	3	0		0		0	
23	J.S	434.375	41		2	3	2	0	1	1	1	0	1	1	2	4	2	4	2	4	1	2	1	0
24	K	293.75	69		2	3	2	4	1	1	1	0	1	0	2	2	1	2	2	4	1	0	1	0
25	AL	421.875	37		2	3	2	0	1	1	1	0	1	1	2	4	2	4	2	4	1	2	1	0
26	R	412.5	37		2	3	2	0	1	1	1	0	1	1	2	4	2	4	2	4	1	2	1	0
27	G	393.75	37		2	2	2	2	1	1	1	0	1	0	2	3	2	1	2	2	1	1	1	1
28	V	396.875	37		1	1	2	3	1	2	1	1	0		1	2	2	3	2	3	1	2	0	
29	M	400	35		1	0	2	2	1	1	0		1	2	1	1	1	3	1	1	0		1	1
30	PR	396.875	38		2	1	2	4	0		1	1	0		1	2	1	2	1	1	1	2	0	
31	S	450	37		2	3	1	1	3	1	1	1	0		1	1	2	2	3	1	0		3	3
32	J.S	421.875	46		1	1	0		2	2	1	0	1	0	2	2	3	2	1	1	0		2	2
33	A.S	434.375	35		2	4	1	2	1	2	0		1	1	1	3	2	2	2	2	1	2	0	
34	R.S	418.75	35		2	2	2	3	1	2	0		0		1	1	1	1	2	3	1	0	1	1
35	M	409.375	37		1	1	1	2	1	1	0		1	1	1	1	0		1	0	1	1	0	
36	P	409.375	37		1	1	2	3	1	2	1	1	0		1	2	2	3	2	3	1	2	0	
37	YN	359.375	35		2	2	2	0	1	1	0		1	1	2	2	1	1	2	1	1	1	0	
38	A	381.25	35		1	2	2	4	1	2	1	0	0		1	1	1	2	2	4	1	2	0	
39	P	393.75	35		2	0	2	1	1	0	1	0	0		2	1	1	1	2	0	1	0	0	
40	H.S	393.75	35		1	2	2	3	1	2	0		0		1	2	1	2	2	2	1	1	0	
41	YV	409.375	35		2	0	1	0	1	0	1	0	0		2	0	1	0	2	0	1	0	1	0
42	A.S	418.75	35		2	3	1	1	1	2	0		1	1	2	4	1	2	2	4	1	2	0	
43	D.R.S	353.125	35		1	0	2	2	1	1	0		1	2	1	1	1	3	1	1	0		1	1
44	G	415.625	51		2	0	2	1	1	0	1	0	0		2	1	1	1	2	0	1	0	0	
45	A	409.375	37		1	1	1	2	1	1	1	1	0		2	3	1	2	2	3	1	2	0	
46	P	378.125	37		1	1	1	2	1	2	1	1	0		1	2	2	2	2	4	1	2	0	
47	S.K	378.125	46		2	2	2	2	1	1	1	0	1	0	2	3	2	1	2	2	1	1	1	1
48	KN	396.875	44		2	4	0		1	2	0		0		2	3	1	4	1	2	1	2	0	
49	Y	396.875	61		2	3	2	2	1	0	1	1	1	0	2	1	2	1	2	4	1	1	1	2
50	T.M	434.375	37		2	4	1	1	1	2	0		1	1	1	1	2	2	2	2	1	2	0	
51	A	431.25	68		2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1
52	G.K	387.5	44		2	4	2	1	1	1	1	0	1	1	2	0	2	0	2	0	1	1	1	1
53	BJ	415.625	46		2	4	2	1	1	1	1	0	1	1	2	0	2	0	2	0	1	1	1	1
54	I	381.25	46		1	4	3	3	1	2	0		1	3	2	4	2	1	2	1	0		0	
55	S	403.125	40		2	3	1	1	3	1	1	1	0		1	1	2	2	3	1	0		3	3
56	S	412.5	40		2	2	0		1	1	1	1	1	1	2	3	2	3	2	4	1	2	1	2
57	RD	443.75	35		2	2	3	1	2	1	2	2	2	2	1	1	1	2	3	4	1	2	2	1
58	G.K	396.875	54		2	2	2	3	1	1	1	0	1	0	2	2	2	3	2	4	1	2	1	2
59	P	384.375	49		2	4	2	1	1	1	1	0	1	1	2	0	2	0	2	0	1	1	1	1
60	S	450	46		2	3	1	1	1	2	1	1	1	1	2	3	1	1	2	2	1	0	1	1
61	L	450	35		2	2	1	1	2	1	1	1	1	1	2	2	3	3	2	3	2	2	1	1
62	ED	450	35		1	4	3	3	1	2	0		1	3	2	4	2	1	2	1	0		0	
63	P.K	450	46		0		0		1	0	N	1	1	2	2	0	N	1	2	1	3	2	2	3
64	J.S	450	57		0		0		1	2	0		1	1	2	2	0		1	2	1	3	2	2
65	V.S	384.375	41		2	3	1	1	3	1	1	1	0		1	1	2	2	3	1	0		3	3
66	R	403.125	58		2	3	1	4	1	1	1	1	2	1	1	3	3	2	3	2	2	3	1	1

S.no.	Name		Age	Sex	MRD	Education	Address	Family Type	SES	Diagnosis	Diagnosis Age	Time since Diagnosis	Pharmacological Treatment	Mean pre-transfusion HB	Average Requirement HB	Comorbidities	Cost of treatment	Time Spent in Hospital	Cost of Travel	Missed School days	EMOTION AWARENESS QUESTIONNAIRE
67	A	control	12	M		Middle	Urban	Nuclear	UPPER-MIDDLE CLASS												
68	AD	control	12	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
69	A	control	12	M		High	Urban	Joint	UPPER-CLASS												
70	V	control	12	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
71	A.A	control	12	M		Middle	Urban	Nuclear	UPPER-CLASS												
72	J	control	12	M		High	Rural	Joint	UPPER-CLASS												
73	N	control	12	F		Middle	Urban	Joint	UPPER-LOWER CLASS												
74	M.K	control	12	F		Primary school	Urban	Joint	UPPER-LOWER CLASS												
75	T.H	control	13	M		Middle	Urban	Nuclear	UPPER-CLASS												
76	S	control	13	M		Middle	Rural	Nuclear	UPPER-MIDDLE CLASS												
77	M.K	control	13	M		Middle	Rural	Joint	LOWER-MIDDLE CLASS												
78	S.A	control	13	M		High	Urban	Joint	UPPER-CLASS												
79	K	control	13	M		Middle	Urban	Joint	UPPER-MIDDLE CLASS												
80	G.S	control	13	M		High	Urban	Joint	UPPER-CLASS												
81	Y	control	13	M		High	Urban	Joint	UPPER-CLASS												
82	A	control	13	M		Middle	Urban	Joint	UPPER-MIDDLE CLASS												
83	V	control	14	F		Middle	Urban	Joint	UPPER-LOWER CLASS												
84	EJ	control	14	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
85	A	control	14	F		High	Urban	Nuclear	LOWER-MIDDLE CLASS												
86	K	control	14	F		High	Urban	Nuclear	UPPER-CLASS												
87	H.V	control	14	F		Middle	Urban	Nuclear	UPPER-CLASS												
88	EP	control	14	F		Middle	Rural	Joint	UPPER-MIDDLE CLASS												
89	A	control	14	M		Middle	Rural	Nuclear	UPPER-LOWER CLASS												
90	N	control	14	M		Middle	Rural	Nuclear	UPPER-LOWER CLASS												
91	K.K	control	14	F		Middle	Urban	Nuclear	UPPER-MIDDLE CLASS												
92	S	control	14	M		Middle	Urban	Joint	UPPER-LOWER CLASS												
93	Y.B.S	control	14	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
94	V	control	14	F		Middle	Rural	Nuclear	LOWER-MIDDLE CLASS												
95	Y.B	control	14	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
96	H	control	14	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
97	A	control	14	F		Middle	Urban	Joint	UPPER-MIDDLE CLASS												
98	R	control	14	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
99	P.A	control	14	M		Middle	Rural	Nuclear	UPPER-MIDDLE CLASS												
100	K.B	control	14	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
101	G	control	15	M		High	Urban	Nuclear	UPPER-LOWER CLASS												
102	A	control	15	F		High	Urban	Nuclear	UPPER-CLASS												
103	P	control	15	M		High	Urban	Joint	UPPER-CLASS												
104	A	control	15	M		High	Rural	Joint	LOWER-MIDDLE CLASS												
105	A	control	15	F		High	Urban	Joint	UPPER-MIDDLE CLASS												
106	M	control	15	F		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
107	J	control	15	F		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
108	S	control	15	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
109	S	control	15	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
110	P	control	15	M		High	Urban	Nuclear	UPPER-CLASS												
111	J.B	control	15	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
112	S.S	control	15	M		High	Urban	Nuclear	LOWER-MIDDLE CLASS												
113	M.T	control	15	M		High	Urban	Nuclear	UPPER-CLASS												
114	H.N	control	15	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
115	S	control	15	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
116	S.S	control	15	M		High	Urban	Nuclear	UPPER-LOWER CLASS												
117	P.S	control	15	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
118	HJ.S	control	15	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
119	K.K	control	15	F		Middle	Rural	Joint	UPPER-CLASS												
120	R	control	15	M		Middle	Urban	Nuclear	UPPER-LOWER CLASS												
121	M	control	15	F		Middle	Rural	Joint	UPPER-LOWER CLASS												
122	A	control	15	M		Middle	Urban	Nuclear	UPPER-CLASS												
123	H.S	control	15	M		Middle	Urban	Joint	UPPER-CLASS												
124	M.A	control	15	M		High	Urban	Nuclear	UPPER-CLASS												
125	D.D	control	16	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
126	J.S	control	16	M		High	Urban	Joint	LOWER-MIDDLE CLASS												
127	J.S	control	16	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
128	HD	control	16	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
129	E.S	control	16	M		Middle	Rural	Joint	UPPER-MIDDLE CLASS												
130	A	control	16	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
131	G.S	control	16	M		Middle	Urban	Nuclear	UPPER-CLASS												
132	T.D	control	16	M		High	Urban	Joint	UPPER-MIDDLE CLASS												

S.no.	Name	Differentiating emotions	Verbal Sharing of Emotions	Acting out	Bodily Awareness	Attending to Others	Analysis of emotions	GHQ-12	Pediatric Symtoms Checklist	Internalizing	Attention	Externalizing	Total	PeadsQL Family Impact Module	Physical_PAST 1 M	Emotional_PAST 1 M	Social_PAST 1 M	Cognitive_PAST 1 M	Communication_PAST 1 M	Worry_PAST 1 M	Daily Activity	Family Relationships	TOTAL SCORES_PAST 1 M	PARENTS HRQL SUMMARY_PAST 1 M
67	A	8	2	4	3	6	5	6		1	2	0	3		550	400	400	500	300	500	300	500	95.83333	172.5
68	AD	4	2	5	5	5	6	6		2	3	7	12		425	400	375	450	300	500	200	500	87.5	157.5
69	A	3	3	6	6	6	8	5		1	5	4	10		600	500	400	500	300	500	300	500	100	180
70	V	7	5	8	3	5	7	11		2	5	4	11		600	500	400	500	300	500	300	500	100	180
71	A.A	1	2	5	4	8	4	4		2	3	3	8		375	275	250	450	125	475	300	500	76.38889	137.5
72	J	6	2	5	3	3	1	8		2	5	1	8		600	500	400	500	300	500	300	500	100	180
73	N	7	5	1	0	6	1	0		1	0	0	1		425	400	375	425	300	500	300	350	85.41667	153.75
74	M.K	5	3	4	6	6	7	10		2	3	0	5		425	375	325	350	400	500	300	375	84.72222	152.5
75	T.H	6	2	5	3	5	5	13		0	0	0	0		525	500	350	450	250	500	300	500	93.75	168.75
76	S	3	2	4	3	4	5	18		0	3	1	4		425	400	375	450	300	500	200	475	86.80556	156.25
77	M.K	6	2	5	3	3	1	11		1	5	6	12		275	300	325	475	225	425	300	500	78.47222	141.25
78	S.A	1	1	0	0	0	0	1		2	0	0	2		600	500	475	500	300	475	300	475	100.6944	181.25
79	K	4	2	3	3	2	3	12		1	3	1	5		400	325	225	300	225	500	225	350	70.83333	127.5
80	G.S	2	2	0	4	8	10	6		0	1	0	1		575	475	400	500	300	500	300	500	98.61111	177.5
81	Y	6	2	5	3	3	1	3		0	5	1	6		425	375	400	500	400	500	250	300	87.5	157.5
82	A	5	2	7	7	5	7	15		2	6	11	19		500	300	400	125	300	500	125	500	76.38889	137.5
83	V	4	5	2	2	7	4	8		3	3	1	7		425	375	400	500	400	500	250	300	87.5	157.5
84	EJ	8	4	4	4	4	4	12		1	5	3	9		450	375	300	375	225	375	225	375	75	135
85	A	13	4	10	4	5	7	18		4	5	5	14		450	400	225	325	250	200	250	425	70.13889	126.25
86	K	2	4	3	4	2	6	4		0	0	0	0		400	300	250	375	200	475	200	250	68.05556	122.5
87	H.V	7	3	1	6	3	5	6		1	2	1	4		375	425	400	450	300	475	300	500	89.58333	161.25
88	EP	8	1	3	3	6	5	12		0	1	0	1		450	400	300	375	250	500	225	500	83.33333	150
89	A	6	3	5	5	6	9	11		1	0	0	1		500	475	325	450	275	475	300	475	90.97222	163.75
90	N	6	4	5	6	6	7	7		0	0	0	0		475	450	400	475	300	500	300	500	94.44444	170
91	K.K	12	4	5	7	6	8	18		5	5	2	12		450	400	300	375	250	500	225	500	83.33333	150
92	S	6	2	7	4	5	7	3		0	0	0	0		500	425	325	500	275	450	300	450	89.58333	161.25
93	Y.B.S	6	3	5	5	8	5	16		1	6	6	13		425	325	200	300	200	500	300	225	68.75	123.75
94	V	6	1	8	4	5	6	10		0	1	0	1		300	300	300	400	75	500	250	500	72.91667	131.25
95	Y.B	1	0	0	6	4	4	3		2	2	7	11		600	500	400	500	300	500	300	500	100	180
96	H	4	3	4	4	6	6	12		3	0	1	4		300	300	300	400	75	500	300	500	74.30556	133.75
97	A	9	2	4	4	6	5	11		1	1	1	3		550	350	275	300	175	500	200	400	76.38889	137.5
98	R	10	4	8	7	7	7	13		2	7	6	15		300	300	300	400	75	500	300	400	71.52778	128.75
99	P.A	7	5	7	6	7	4	19		1	5	7	13		325	275	250	200	125	500	200	200	57.63889	103.75
100	K.B	4	4	3	3	3	7	11		3	6	2	11		600	500	400	500	300	500	300	500	100	180
101	G	0	0	2	0	3	5	11		0	1	0	1		600	500	400	500	300	500	300	500	100	180
102	A	4	4	3	3	3	7	11		0	3	2	5		500	475	325	450	275	475	300	475	90.97222	163.75
103	P	10	4	7	6	5	6	6		1	5	1	7		300	250	250	450	150	275	225	325	61.80556	111.25
104	A	4	6	7	4	5	4	12		0	0	0	0		375	275	225	450	250	500	200	500	77.08333	138.75
105	A	13	4	8	6	6	8	7		1	5	4	10		225	175	225	250	100	500	150	175	50	90
106	M	9	5	7	6	8	6	11		0	0	0	0		275	100	200	300	200	350	200	275	52.77778	95
107	J	11	2	6	3	4	7	11		2	6	2	10		225	125	175	150	125	225	100	100	34.02778	61.25
108	S	7	3	5	4	6	6	9		1	8	4	13		300	250	250	450	150	275	225	325	61.80556	111.25
109	S	12	4	5	7	6	8	5		1	5	6	12		600	500	400	500	300	500	300	500	100	180
110	P	7	2	2	6	5	6	12		2	7	6	15		600	500	400	500	300	500	300	500	100	180
111	J.B	7	3	8	3	7	4	17		4	4	1	9		600	500	400	500	300	500	300	500	100	180
112	S.S	7	3	2	3	2	4	2		3	5	3	11		600	500	400	500	300	500	300	500	100	180
113	M.T	7	4	5	6	6	8	5		1	4	4	9		600	500	400	500	300	500	300	500	100	180
114	H.N	9	4	9	4	6	6	7		0	0	0	0		600	500	400	500	300	500	300	500	100	180
115	S	5	5	6	6	6	10	10		1	6	2	9		350	400	250	350	225	425	175	475	73.61111	132.5
116	S.S	1	3	8	2	6	10	2		1	8	6	15		450	250	400	500	300	500	300	500	88.88889	160
117	P.S	4	0	6	9	5	7	2		4	8	3	15		600	500	400	500	300	500	300	500	100	180
118	HJ.S	11	5	9	7	5	7	14		1	4	5	10		600	325	400	325	300	500	300	500	90.27778	162.5
119	K.K	12	4	5	7	6	8	21		2	5	2	9		425	300	300	275	300	475	150	375	72.22222	130
120	R	6	2	6	3	8	5	2		0	0	0	0		575	325	400	500	300	450	300	500	93.05556	167.5
121	M	5	5	5	6	4	5	12		0	2	2	4		400	300	275	325	300	500	300	400	77.77778	140
122	A	4	4	6	5	5	5	0		2	2	1	5		600	300	400	500	300	500	300	500	94.44444	170
123	H.S	0	2	3	2	6	8	5		0	0	4	4		600	300	400	500	300	500	300	500	94.44444	170
124	M.A	7	3	5	5	5	5	14		1	1	2	4		475	400	350	425	275	450	275	475	86.80556	156.25
125	D.D	7	4	8	6	6	7	10		2	5	5	12		300	100	275	400	200	425	300	300	63.88889	115
126	J.S	14	3	9	10	8	10	3		0	3	3	6		425	300	300	275	300	475	150	375	72.22222	130
127	J.S	5	3	4	6	6	7	5		0	3	2	5		600	500	400	500	300	500	300	500	100	180
128	HD	14	6	9	10	8	10	4		0	3	2	5		600	500	400	500	300	500	300	500	100	180
129	E.S	5	5	6	6	6	10	5		2	3	2	7		600	500	400	500	300	500	300	500	100	180
130	A	3	4	7	3	8	9	2		2	7	3	12		600	500	400	500	300	500	300	500	100	180
131	G.S	13	3	6	8	5	9	24		3	2	5	10		450	375	300	450	225	250	300	500	79.16667	142.5
132	T.D	8	4	9	6	4	7	7		2	6	2	10		525	450	375	450	300	425	250	500	90.97222	163.75

S.no.	Name	FAMILY FUNCTIONING SUMMARY SCORES_PAST 1 M	CDI	KIDCOPE	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
67	A	431.25	50		2	3	1	0	1	1	2	0	1	1	2	1	1	0	1	0	1	3	1	1
68	AD	393.75	45		0		1	0	1	3	1	3	0		1	2	1	4	2	4	2	3	3	4
69	A	450	41		2	3	1	1	3	1	1	1	0		1	1	2	2	3	1	0		3	3
70	V	450	65		2	1	1	3	2	4	2	2	1	4	2	3	1	2	2	3	2	4	1	1
71	A.A	343.75	35		0	2	3	0		2	3	1	0	1	1	2	3	1	2	1	1	3	4	1
72	J	450	49		1	0	2	3	2	4	1	3	0		2	2	1	1	1	3	2	2	3	3
73	N	384.375	54		2	2	0		0		0		0		1	1	1	1	0		1	2	0	
74	M.K	381.25	56		2	3	1	1	1	2	1	1	0		2	3	2	3	1	1	1	2	0	
75	T.H	421.875	46		2	3	1	1	3	1	1	1	0		1	1	2	2	3	1	0		3	3
76	S	390.625	46		2	3	2	3	1	2	1	0	1	1	2	4	2	3	2	4	1	2	1	1
77	M.K	353.125	56		2	3	2	3	2	3	2	3	2	3	2	2	2	3	2	3	2	2	2	3
78	S.A	453.125	42		1	1	1	1	0		0		1	2	1	1	2	2	2	2	1	1	1	1
79	K	318.75	41		1	3	2	1	1	2	1	2	1	0	2	0	1	2	1	2	1	4	2	3
80	G.S	443.75	36		2	3	1	2	0		1	2	1	3	2	0	1	3	0		1	1	1	1
81	Y	393.75	48		1	4	2	4	3	2	0		1	2	2	1	3	3	3	4	3	3	2	2
82	A	343.75	68		2	3	1	4	0		3	2	2	3	3	3	2	4	0		2	3	3	2
83	V	393.75	34		1	1	0		1	1	2	1	1	2	2	2	3	1	2	2	2	2	0	
84	EJ	337.5	46		2	2	2	2	1	1	1	0	1	0	2	2	2	2	2	0	1	2	1	1
85	A	315.625	55		3	2	3	3	1	0	0		3	3	3	3	3	3	3	2	0		3	1
86	K	306.25	34		2	3	1	2	1	2	2	2	1	2	1	3	2	3	1	3	1	2	2	3
87	H.V	403.125	44		1	1	1	2	2	4	0		0		0		2	2	3	4	1	4	3	0
88	EP	375	39		2	3	3	4	1	2	0		1	2	1	1	0		1	1	0		1	2
89	A	409.375	45		3	4	3	3	3	2	2	3	0		0		3	3	2	3	1	1	2	0
90	N	425	45		2	4	2	2	0		3	2	2	0	1	0	2	2	3	3	3	4	3	2
91	K.K	375	66		1	0	2	2	3	4	1	0	0		2	3	2	2	2	3	0		1	2
92	S	403.125	39		2	3	1	1	2	2	1	1	2	2	2	2	0		3	2	2	2	2	3
93	Y.B.S	309.375	75		2	2	3	1	2	1	2	2	2	2	1	1	1	2	3	4	1	2	2	1
94	V	328.125	49		2	3	1	1	3	4	1	2	2	2	3	2	2	3	2	3	1	2	2	1
95	Y.B	450	36		1	4	0		1	3	1	3	0		1	3	1	4	1	1	3	3	3	4
96	H	334.375	42		1	3	2	1	1	4	1	0	0		3	4	2	4	0		3	4	0	
97	A	343.75	46		1	2	1	2	2	2	1	3	0		1	1	0		1	1	2	2	1	3
98	R	321.875	45		1	1	2	3	1	2	1	2	2	2	2	2	0		2	2	3	4	2	2
99	P.A	259.375	66		1	1	2	3	2	1	0		2	2	1	1	3	2	2	2	1	2	3	1
100	K.B	450	36		1	1	2	2	2	3	0		1	1	2	1	1	0	2	2	3	4	3	3
101	G	450	36		2	3	0		2	3	1	0	1	1	2	3	1	2	1	1	3	4	1	1
102	A	409.375	34		2	4	1	1	1	2	0		1	1	1	1	2	2	2	2	1	2	0	
103	P	278.125	36		0		3	4	2	3	1	1	3	0	3	4	3	4	2	1	3	4	2	1
104	A	346.875	46		2	3	2	1	1	2	1	1	2	0	2	0	1	2	2	2	2	3	1	0
105	A	225	49		2	3	1	4	3	4	3	0	2	0	3	3	2	3	3	2	1	3	2	1
106	M	237.5	49		2	3	3	4	2	3	3	4	2	3	1	3	3	4	3	4	2	3	1	1
107	J	153.125	55		2	1	0		1	1	2	2	3	0	2	3	3	4	3	4	0		3	4
108	S	278.125	36		2	3	2	1	3	3	2	3	1	1	3	4	3	4	1	1	3	4	2	3
109	S	450	39		3	3	3	3	3	4	2	0	2	3	2	2	3	4	3	3	3	1	1	1
110	P	450	42		2	3	1	4	1	1	1	1	2	0	1	3	2	1	3	3	3	4	2	2
111	J.B	450	40		3	3	3	3	3	4	2	0	2	3	2	2	3	4	3	3	3	1	1	1
112	S.S	450	**50**		2	1	1	3	2	3	1	2	1	0	1	4	2	3	2	4	1	2	3	4
113	M.T	450	36		2	4	1	1	1	2	0		1	1	1	1	2	2	2	2	1	2	0	
114	H.N	450	36		2	3	2	3	2	4	1	3	0		1	2	1	4	2	4	2	3	3	4
115	S	331.25	42		3	3	3	4	3	4	3	2	3	1	1	2	3	3	3	4	3	4	3	3
116	S.S	400	42		1	4	2	4	3	2	0		1	2	2	1	3	3	3	4	3	3	2	2
117	P.S	450	42		3	3	2	1	3	4	3	4	3	2	1	0	3	3	3	4	1	3	3	1
118	HJ.S	406.25	36		0	4	1	1	1	2	0		1	1	1	1	2	2	2	2	1	2	0	
119	K.K	325	66		1	0	2	2	3	4	1	0	0		2	3	2	2	2	3	0		1	2
120	R	418.75	39		3	2	3	4	3	4	2	3	0		0		3	2	3	3	3	2	3	2
121	M	350	42		3	4	0		1	1	0		1	0	1	0	2	3	0		0		0	
122	A	425	41		3	3	2	4	1	1	0		3	3	2	4	3	1	2	4	3	3	3	4
123	H.S	425	36		3	2	4	1	1	1	0	1	0	2	2	1	2	2	4	1	0	1	0	
124	M.A	390.625	36		1	1	1	2	1	2	1	1	1	1	2	1	1	1	2	1	1	1	2	1
125	D.D	287.5	36		3	3	1	2	2	3	0		0		1	2	3	4	2	2	3	3	3	4
126	J.S	325	39		3	2	4	1	1	1	0	1	0	2	2	1	2	2	4	1	0	1	0	
127	J.S	450	36		3	4	0		2	3	0		1	1	2	2	2	3	1	3	3	4	2	3
128	HD	450	42		3	3	3	4	3	4	3	2	3	1	1	2	3	3	3	4	3	4	3	3
129	E.S	450	41		3	3	3	3	3	4	2	0	2	3	2	2	3	4	3	3	3	1	1	1
130	A	450	52		0		2	4	3	4	1	1	1	0	1	4	3	4	3	1	3	4	3	4
131	G.S	356.25	51		1	1	0		1	2	1	2	0		1	1	1	1	2	2	1	1	1	0
132	T.D	409.375	57		3	3	2	3	1	4	2	3	2	0	1	2	1	4	2	4	2	3	3	4

S.no.	Name		Age	Sex	MRD	Education	Address	Family Type	SES	Diagnosis	Diagnosis Age	Time since Diagnosis	Pharmacological Treatment	Mean pre-transfusion HB	Average Requirement HB	Comorbidities	Cost of treatment	Time Spent in Hospital	Cost of Travel	Missed School days	EMOTION AWARENESS QUESTIONNAIRE
133	A	control	16	F		High	Urban	Nuclear	UPPER-CLASS												
134	G.S	control	16	M		Middle	Urban	Nuclear	UPPER-CLASS												
135	A.S	control	16	M		Middle	Urban	Joint	UPPER-MIDDLE CLASS												
136	V	control	16	M		Middle	Urban	Nuclear	UPPER-CLASS												
137	I	control	16	M		Middle	Urban	Joint	UPPER-CLASS												
138	V	control	16	F		High	Rural	Joint	UPPER-CLASS												
139	J	control	16	M		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
140	C	control	16	F		High	Urban	Nuclear	UPPER-MIDDLE CLASS												
141	M	control	16	F		Middle	Urban	Nuclear	UPPER-CLASS												
142	G	control	16	M		Middle	Urban	Joint	UPPER-CLASS												
143	GJ	control	16	M		High	Urban	Joint	UPPER-CLASS												
144	A.B	control	16	M		High	Urban	Joint	UPPER-CLASS												
145	G	control	16	F		High	Urban	Nuclear	UPPER-CLASS												
146	V	control	16	F		High	Rural	Joint	UPPER-MIDDLE CLASS												
147	L.V	control	16	M		High	Urban	Nuclear	UPPER-LOWER CLASS												
148	A.B	control	16	M		High	Urban	Joint	UPPER-MIDDLE CLASS												
149	G.K	control	16	F		Middle	Rural	Joint	LOWER-MIDDLE CLASS												
150	T	control	16	F		High	Urban	Nuclear	UPPER-MIDDLE CLASS												

S.no.	Name	Differentiating emotions	Verbal Sharing of Emotions	Acting out	Bodily Awareness	Attending to Others	Analysis of emotions	GHQ-12	Pediatric Symtoms Checklist	Internalizing	Attention	Externalizing	Total	PeadsQL Family Impact Module	Physical_PAST 1 M	Emotional_PAST 1 M	Social_PAST 1 M	Cognitive_PAST 1 M	Communication_PAST 1 M	Worry_PAST 1 M	Daily Activity	Family Relationships	TOTAL SCORES_PAST 1 M	PARENTS HRQL SUMMARY_PAST 1 M
133	A	8	3	2	0	3	7	7		2	4	4	10		325	250	350	500	250	425	250	300	73.61111	132.5
134	G.S	14	6	9	10	8	10	7		1	4	6	11		450	375	300	375	225	375	225	375	75	135
135	A.S	9	1	10	3	5	3	17		1	6	6	13		600	500	400	500	300	500	300	500	100	180
136	V	7	2	7	2	5	4	12		1	3	2	6		600	500	400	500	300	375	300	500	96.52778	173.75
137	I	4	2	4	4	5	4	5		1	2	1	4		575	325	400	500	300	450	300	500	93.05556	167.5
138	V	4	4	6	6	6	4	9		1	1	0	2		525	450	375	450	300	425	250	500	90.97222	163.75
139	J	3	3	4	4	7	9	9		1	4	1	6		600	500	375	500	300	475	300	450	97.22222	175
140	C	10	3	8	2	5	7	2		0	0	14	14		375	250	275	500	200	400	225	375	72.22222	130
141	M	7	4	9	7	4	5	0		1	4	6	11		600	275	325	500	250	500	300	450	88.88889	160
142	G	4	0	6	5	4	9	8		3	3	4	10		375	300	400	500	250	500	150	350	78.47222	141.25
143	GJ	7	3	5	5	5	5	5		0	3	2	5		350	325	325	350	300	450	225	325	73.61111	132.5
144	A.B	2	5	10	5	7	6	5		4	1	2	7		450	350	400	450	300	500	300	500	90.27778	162.5
145	G	8	3	8	4	6	8	0		2	6	1	9		550	475	400	475	275	450	100	425	87.5	157.5
146	V	7	2	10	3	5	8	9		1	2	2	5		600	275	325	500	250	500	300	450	88.88889	160
147	L.V	7	4	7	8	4	7	21		1	6	7	14		100	200	225	125	300	500	300	200	54.16667	97.5
148	A.B	4	1	6	7	3	4	14		1	3	2	6		425	300	400	250	300	500	200	500	79.86111	143.75
149	G.K	4	3	7	5	6	8	7		1	2	0	3		425	325	275	450	225	500	275	400	79.86111	143.75
150	T	8	3	10	6	5	8	10		2	2	0	4		575	475	400	500	300	500	300	500	98.61111	177.5

S.no.	Name	FAMILY FUNCTIONING SUMMARY SCORES_PAST 1 M	CDI	KIDCOPE	Distraction F	Distraction E	Social Withdrawal F	Social Withdrawal E	Cognitive restructuring F	Cognitive restructuring E	Self-criticism F	Self-criticism E	Blaming others F	Blaming others E	Problem solving F	Problem solving E	Emotional regulation F	Emotional regulation E	Wishful Thinking F	Wishful Thinking E	Social support F	Social support E	Resignation F	Resignation E
133	A	331.25	39		0		0		3	4	2	3	0		0		3	4	3	3	3	4	3	4
134	G.S	337.5	63		0		0		1	1	2	1	1	1	2	2	1	0	2	2	2	3	1	1
135	A.S	450	36		2	1	1	0	2	1	3	4	3	3	2	3	3	4	2	0	3	3	2	1
136	V	434.375	36		3	4	1	2	3	3	1	1	2	1	1	2	1	4	1	4	3	4	3	2
137	I	418.75	39		3	1	3	0	2	4	0		1	2	3	2	2	4	1	2	3	1	2	3
138	V	409.375	49		2	3	2	2	3	4	2	0	1	0	2	4	3	3	2	1	3	4	2	1
139	J	437.5	48		3	3	2	4	2	2	0		0		2	3	3	4	2	2	2	4	1	2
140	C	325	34		2	3	3	4	3	4	1	1	1	1	2	3	3	3	2	2	2	4	3	4
141	M	400	42		2	3	2	3	2	4	1	3	0		2	2	2	4	3	4	1	3	2	4
142	G	353.125	45		1	2	1	0	0		1	1	1	0	2	2	1	1	2	2	1	1	1	1
143	GJ	331.25	36		1	3	1	4	1	2	1	0	1	2	1	1	2	2	1	1	3	4	3	4
144	A.B	406.25	59		3	4	0		2	3	0		1	1	2	2	2	3	1	3	3	4	2	3
145	G	393.75	49		2	3	3	4	3	4	1	0	1	2	2	3	3	4	2	0	2	4	3	4
146	V	400	42		2	2	3	4	1	2	0		1	2	2	3	1	4	2	4	3	4	2	4
147	L.V	243.75	63		3	4	3	4	3	4	3	4	3	3	4	4	3	4	1	1	1	1	3	4
148	A.B	359.375	62		2	2	2	1	2	3	1	2	2	1	3	1	2	3	3	3	1	0	3	0
149	G.K	359.375	39		2	3	0		1	2	0		1	2	2	4	1	2	1	2	0		1	2
150	T	443.75	52		2	3	3	1	1	2	0		3	2	4	2	3	3	1	1	0		1	1

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The Principal,
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Ludhiana.

Subject: Approval of Plan of Thesis.

This is to inform you that the Faculty of Medical Sciences in its meeting held on 22.01.2024 has approved the plan of thesis of **Ms. Muditadeep kaur,** a student of your college for **M.Phil. (Clinical Psychology)** along with the names of Supervisor/Co-Supervisor as under :-

Topic Plan of Thesis
Comparative study of psychological functioning in children with transfusion dependent thalassemia

Supervisor
Dr. Bholeshwar Prasad Mishra
Prof. & Head
Dept. of Clinical Psychology

Co-Supervisor
Ms. Gursabeen Kaur
Asst. Professor
Dept. of Clinical Psychology
Dr. Shruti Kakkar
Assoc. Professor
Dept. of Pediatrics

The student has to submit the three copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any)

Controller of Examinations

Note :
1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*

COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA.

DISSERTATION PROPOSAL

FOR APPROVAL OF SUBJECT OF DISSERTATION TO BE SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

M. PHIL

IN

CLINICAL PSYCHOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

MARCH, 2023

MS. MUDITADEEP KAUR

DEPARTMENT OF CLINICAL PSYCHOLOGY
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA

ABSTRACT OF PLAN OF DISSERTATION

Title	COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA
For the degree of	M. Phil Clinical Psychology
Name of the candidate	Ms. Muditadeep Kaur
Supervisor	Dr. Bholeshwar Prasad Mishra, Professor & Head, Department of Clinical Psychology, DMCH, Ludhiana
Co-supervisors	Ms. Gursabeen Kaur, Assistant professor, Department of Clinical Psychology, DMCH, Ludhiana Dr. Shruti Kakkar, Associate Professor, Department of Pediatrics, DMCH, Ludhiana
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: One or more of the typical globin chains do not synthesise properly or do not synthesise at all in a category of blood illnesses known as "thalassemia". Currently, based on their clinical severity and transfusion requirement, these can be classified phenotypically into Transfusion-Dependent and Non-Transfusion-Dependent Thalassaemias (NTDTs). There is a dearth of literature regarding variables used in this study on present population in the Indian subcontinent. In order to fulfil the research, gap the present study aims to investigate coping mechanisms, emotional awareness, behavioural issues and affect of disease on family functioning.

Aim of Study: 1) To evaluate and compare coping strategies in children with transfusion dependent thalassemia and healthy control. 2)To evaluate and compare emotional awareness in children with transfusion dependent thalassemia and healthy control.3)To evaluate and compare internalizing and externalizing behaviour in children with transfusion dependent thalassemia and healthy control.4)To evaluate and compare family functioning between children with transfusion dependent thalassemia and healthy control.5)To study the relationship between internalizing or externalizing behaviour, coping strategies, emotional awareness and family functioning in children with transfusion dependent thalassemia.

Materials & methods: Study will be conducted on children with transfusion dependent thalassemia attending thalassemia daily care center and admitted in thalassemia ward at Dayanand Medical College and Hospital, Ludhiana. Healthy control population will be taken from local schools.

Clinical Significance: This study will provide insight into the psychosocial functioning of children and their family members. The results will aid in our analysis of the affected areas and in the planning of treatments to address the psychological issues these children and their families are dealing with. Early psychological symptom diagnosis will help to alleviate distress and preventing the deterioration of psychological functioning, hence, enhancing the quality of their lives.

Keywords: children with thalassemia, behaviour problem, coping strategies, emotional awareness, impact on family functioning.

(Signature)	(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-supervisor	Co-supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of dissertation titled **"COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA."** exist in the Department of Clinical Psychology, DMC&H, Ludhiana and will be provided to the candidate. We will see that the data being included in the dissertation is genuine and is collected by the candidate herself under our supervision and guidance.

Supervisor

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Place: Ludhiana

Date: 03/04/23

APPROVAL PROFORMA
BY RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	Ms. MUDITADEEP KAUR
Department	Clinical Psychology
Topic of Dissertation	COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA
Likely date of appearing in PG examination	June, 2024
Date of enrollment	08.08.2022
Name of Head of Department	Dr. Bholeshwar Prasad Mishra
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Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology)	Adv. Ankur Ghai (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Suvir Singh (Associate Professor, Haematology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Ramit Mahajan (Professor, Gastroenterology)
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Approved: Yes / No

Dr. Sandeep Puri
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Research Committee

Approved: Yes / No

Prof. Arvind Malhotra
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BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

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4	DATE OF ADMISSION OF COURSE	16.08.2022
5	TITLE OF THE TOPIC	COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA.

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

One or more of the typical globin chains do not synthesise properly or do not synthesise at all in a category of blood illnesses known as "thalassemia." A category of inherited or genetic blood illnesses is referred to as thalassemia The fact that at least one parent has thalassemia indicates that the disorder is inherited. When a person has thalassemia mild from only one parent, there may be no symptoms at all or only minimal ones, including modest anaemia. The patient develops a significant form of the disease termed thalassemia major when both parents carry the trait.[1] The thalassaemia go by different names depending on whether chain's synthesis is compromised α, β, γ, δ, δβ or εγδβ thalassaemia. The two most important forms from a therapeutic perspective are and thalassaemia, which are caused by a reduction in one of the two types of polypeptide chains α and β thalassaemia. Anaemia begins even before the child is born because alpha thalassemia is brought on by decreased or missing alpha globin chain synthesis. Reduced or non-existent beta globin chain synthesis results in beta thalassemia. Thalassaemia major typically manifests clinically between the ages of 6 and 24 months. Infants with the condition struggle to thrive and get progressively paler. Feeding problems, agitation, repeated fever attacks brought on by an overactive metabolism or a concurrent infection. Presently, these thalassaemias syndromes can be divided phenotypically into two main groups based on their clinical severity and transfusion requirement: 1. Transfusion-Dependent Thalassaemia (TDTs) and 2. Non-Transfusion-Dependent Thalassaemia (NTDTs).[2]

Thalassemia is gradually becoming one of the real global health problems in the Mediterranean region, the Middle East, India, and the eleven south-east Asian nations. In India, it accounts for just under a thousand live births and roughly two of every thousand recently conceived children worldwide. Often occurring basic hereditary blood disorder is thalassemia. The highest incidence of thalassemia cases are found in European nations like Italy and Greece.[3] Between 1.4 and 3.4% of people in Central India had the -

thalassemia trait, while 0.94% of anaemia patients had the condition. The incidence of -thalassemia trait ranged from 8.50 to 37.90% and that of -TM from 2.30 to 7.47% in South India. There was a greater burden of thalassemia in the northern and western Indian states. The prevalence of -thalassemia trait (0.00-30.50%), -TM (0.36-13.20%), and other hemoglobinopathies [Hb E (HBB: c.79G>A)/-thal] (0.04-15.45%) was greater in tribal communities in Eastern India than in nontribal populations.[4]

As with thalassemia a person's life must undergo significant changes as a result of several chronic conditions. The psychosocial response to chronic conditions is also influenced by routine changes, such as taking on a caregiving role, changes in one's sexual life, social relationships, and material well-being. Unsatisfactory adaptation can result in sadness, denial, lower self-esteem, addiction, social disintegration, job problems, discord and the desire to establish a family also cause an individual's anxiety to increase. In thalassaemia major, psychological well-being affects survival via influencing adherence to chelation therapy.[5] Anxiety, hopelessness, and depression can also be brought on by frequent hospitalisation due to transfusions, being away from the family, activity restrictions and pain, iron chelation therapy side effects, and fear of death. Patients may go through many stages of their lives with a variety of mental issues include anger, bitterness, hostility, hopelessness, inability to cope with worry, dread of death, loss of confidence, somatization, decreased self-esteem, loneliness, irritability, helplessness, and a lack of respect for oneself.[6-7]

The risk of behavioural and developmental issues is higher in thalassemia children, according to a small number of studies. The findings, however, were mixed, ranging from minor behavioural issues to overt psychiatric diseases.[8] As a result of their inability to focus and concentrate, poor memory, inappropriate behaviour in the classroom, and increased delinquency and crime in adulthood, emotional and behavioural issues in children make it difficult for them to learn.[9] Emotional and behavioural issues in children are frequently correlated with a variety of biopsychosocial stressors, such as

physical sickness, domestic abuse, insufficient peer interactions, and parenting (Wiguna et al., 2010).[10] The behavioural profile of thalassemic children is similar to that of normal subjects, but many of them can exhibit severe psychosocial problems due to difficulties in complying with the painful chelation; male patients, in particular, show oppositional defiant disorder. Thalassemic children feel different from their peers and elaborate negative thoughts about their lives, guilt senses, increased anxiety, and low self-esteem. Concerns for the future of the thalassemic child within the family may deteriorate inter-relationships and enhance marginalisation and isolation.[5] Even though children with TM have longer life expectancies thanks to superior medical care, the psychosocial issues they experience must also be taken into consideration.[11]

Over the past few years, research on psychosocial issues in children with thalassemia has grown. There are however, few psychological researches that examine the effects of the illness on the children with transfusion-dependent thalassemia among the researches that were conducted. Moreover, most of the researches in this area were done in western country. There is a dearth of literature regarding these variables on present population in the Indian subcontinent. In order to fulfil the research gap the present study aims to investigate coping mechanisms, emotional awareness, behavioural issues, and the affects of disease on family dynamics and relationships.

6.2 REVIEW OF LITERATURE

Tsiantis J., et. al., (1996) conducted a study on "Psychosocial problems and adjustment of children with β-thalassemia and their families". A total number of 188 families with children aged 6 to 14 years participated in study. Rutter Parental Questionnaire and the Goldberg General Health Questionnaire scales were used. Result of the study indicate that poor family adjustment was correlated with the father's low level of education and the prevalence of serious medical issues. [12]

In a study conducted by Cadman et al. (1987) on "Chronic illness, disability, and mental and social well-being" a total of 1,869 Ontario families including 3,294 children aged between 4 to 16 years were included. Child Behaviour Checklist scale (CBCL) was used. Findings indicated that 20% of kids with long-term physical issues also have some type of psychological disorder. The incidence rate was 2–3 times the rate in the general population. According to the Diagnostic and Statistical Manual of Mental Disorders III, around 33% of these kids had at least one psychological disorder.[13]

Goldbeck L, et. al., (2000) conducted a study on "Psychosocial aspects of beta-thalassemia: distress, coping and adherence". A total of 43 patients with TM between 3 to 26 years participated in the study. the Ulm Thalassemia Inventory, the KIDCOPE, the Multidimensional Health Locus of Control Scales and the Giessen Complaint List scales were used in the study. Result of the study indicate that the additional psychosocial support did reduce emotional distress, strengthened coping competence and led to a better integration of therapy in daily life.[14]

Mikelli A, et. al., (2004) conducted a study on "Brief report: Depressive symptoms and quality of life in adolescents with b-thalassaemia". A total of 136 subjects of 12–16 years participated in the study. Beck Depression Inventory (BDI) and Short Form-36 (SF-36) scales were used in the study. Result of the study indicate that the presence of depressive symptoms had an influence on the quality of life of thalassaemic adolescents.[15]

In a study conducted by Aydinok Y, et. al., (2005) on "Psychosocial implications of Thalassemia Major" a total of 38 patients with TM aged between 6 and 18 years and their mothers participated in the study. Child Behaviour Check-list (CBCL) and Symptom Distress Checklist 90 (SCL-90) scales were used in the study. Findings indicated that the patients and their parents, who were more conscious of the illness, were more worried but more compliant with the therapy and need stronger psychiatric support.[16]

Kuo HT, et. al., (2006) conducted a study on "Pilot study on the "quality of life" as reflected by psychosocial adjustment of children with thalassemia major undergoing iron-chelating treatment in western Taiwan. Hemoglobin." A total of 55 patients with TM participated in the study. Wechsler Preschool and Primary Intelligence Scales, revised; Wechsler Intelligence Scale for Children-III; Wechsler Adult Intelligence Scale-III scales were used in the study. Result of the study indicate QL, as reflected by psychosocial adjustment in children with TM, is an excellent method for learning about parental-child adjustment regarding a chronic physical condition such as TM.[17]

Saini, A et. al., (2007) conducted a study on "Case Control Study of Psychosocial Morbidity in beta Thalassemia Major". Sixty children of age 5 to 15 years with transfusion-dependent thalassemia major participated in the study. A semi-structured interview along with the questionnaires Pediatric Symptom Checklist [PSC] and Childhood Psychopathology Measurement Schedule [CPMS] scales were used. Result of the study indicate that Children with thalassemia have significantly higher psychosocial morbidity.[18]

Sabry N, et. al., (2009) conducted a study on "Cognitive abilities, mood changes and adaptive functioning in children with β thalassaemia". 200 children of age 5 to 15 years participated in the study. The Children's Depression Inventory (CDI), Vineland Adaptive Behavior Scale and Wechsler Intelligence Scale for Children 3rd edition (WISC-III-R) scales were used. Result of the study indicate that their adaptive performance is compromised in all domains and they have three times more depressive symptoms than normal control population.[8]

In a study conducted by Thavorncharoensap M, et al., (2010) on "Factors affecting health-related quality of life in Thai children with thalassemia", 330 children of age 2 to 18 years participated in the study. A Paediatric Quality of Life Inventory™ (PedsQL™) 4.0 Generic Core Scale (Thai version) scales were used. Result of the study indicate that Children with thalassemia have significantly higher psychosocial morbidity. In addition, the study indicated that special care and attention should be given to patients with a severe condition and those who are receiving subcutaneous iron chelation therapy.[19]

Ali S, et. al., (2012) conducted a study on "Psychological distress and coping strategies among parents of beta-thalassemia major patients". A total of 40 parents of thalassaemic children participated in study. The psychological distress was assessed using the Parental Stress Scale (PSS) and General Health Questionnaire (GHQ) and coping strategies were assessed using COPE Inventory. Result indicates that all the parents of the thalassaemic patients suffered extreme parental stress and psychological distress, specifically among parents of β-thalassaemic patients. The ongoing nature of beta thalassaemia can place a heavy psychological load on both patients and their families.[20]

Aziz K, et. al., (2012) conducted a study on "Psychosocial problems of Pakistani parents of Thalassemic children: a cross sectional study done in Bahawalpur, Pakistan." A total of 100 parents of thalassaemic children participated in the study. Pediatric Quality of Life Inventory scale was used. Findings of the study indicated substantial number of parents have psychosocial problems due to the disease of their child.[21]

Hongally C, et. al., (2012) conducted a study on "Study of behavioural problems in multi-transfused thalassemia". A total of Fifty multi-transfused thalassaemic children, aged 5–10 years participated in study. Child Behaviour Check List (Achenbach) (CBCL) and Parental Attitude Scale scales were used. Result of the study indicate Children who were older, had poorer academic performance, and had mothers with higher education levels along

with a family history of thalassemia and lower pre-transfusion haemoglobin levels had longer absences from school and higher CBCL scores.[22]

Yengil E, et. al., (2014) conducted a study on "Anxiety, depression and quality of life in patients with beta thalassemia major and their caregivers". A total of Ninety patients with BTM and 67 caregivers above age 12 years participated in study. Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). And Short Form-36 (SF-36) scales were used. Result of the study indicate BTM leads to an increase in the frequency of depression and anxiety in both patients and their caregivers, and has a negative impact on the physical and mental components of quality of life.[23]

Behrouzian F, et. al., (2014) conducted a study on "Relationship of coping mechanism of mothers with mental health of their major thalassemic children." A total of 36 patients with TM and their mothers age 12-16years participated in study. coping styles questionnaire (CSQ) (for mothers), and SCL90-R questionnaire (for children) scales were used. The study's findings showed that 91.2% of children with thalassemia experienced psychosocial issues. A substantial positive association between mothers' maladaptive coping mechanisms and the psychological issues of their kids was discovered.[24]

Behdani F, et. al., (2015) conducted a study on "Psychological aspects in children and adolescents with major thalassemia: A case-control study". A total of 120 children of 7-18 years participated in study. Paediatric Quality of LifeTM (PedsQL™), Strengths and Difficulties Questionnaires (SDQ), State and Trait Anxiety and Children's Depression Inventory (CDI) scales were used. Result of the study indicate that patients diagnosed with thalassemia had a positive correlation with lower QOL, higher depressive symptoms and behavioral problems as compared healthy subjects.[25]

Inamdar S, et. al., (2015) conducted a study on "Stress level among caregivers of thalassemia patients". A total of Thirty-five Care giving parents participated in the study. Zarit Burden Interview scale were used. The study's findings showed that the parents' psychosocial burden was (60.6%).[26]

Keshvari M, et. al., (2016) conducted a study on "Relation between children's well-being and family function in children with thalassemia major in Isfahan in 2013". A total of 97 children of 10-16 years with thalassemia participated in the study. Adolescent Psychological Wellbeing Scale and Family Functioning Questionnaire scales were used. Results of this study indicate that there is a direct relationship between family functioning and emotional well-being of children with thalassemia major.[27]

Anum J, (2016) conducted a study on "Caregiver burden, spirituality, and psychological well-being of parents having children with thalassemia.". A total of 80 parents with thalassemia diagnosed children participated in the study. Montgomery–Borgatta burden measure, Multidimensional Measure of Islamic Spirituality and Ryff Scale of Psychological Well-being scales were used. Results indicated that the caregiver burden was negatively correlated with the psychological well-being and the domains of spirituality, whereas the psychological well-being and spirituality were positively correlated.

Deepak SS, et. al., (2017) conducted a study on "Assessment of Psychosocial Impact on Parents of Thalassaemic Children.". A total of 84 children of 3-14 years and their parents participated in the study PedsQL Family impact Module questionnaire scale was used. Results of this study indicate that the diagnosis of Thalassemia has significantly impaired the psychosocial functioning of parents of affected children.

Ali A, et. al., (2018) conducted a study on "Coping strategies among children with thalassemia". A total of 300 of thalassaemic children of age 12- 18 years participated in the study. Children's Coping Strategies Checklist- Revision 1 (CCSC- R1) scale was used. Result indicates positive relationship between coping strategies and building general well-being condition of children with thalassemia.

Elzaree FA, et. al., (2018) conducted a study on "Adaptive functioning and psychosocial problems in children with beta thalassemia major". A total of 100 children participated in study of 5-17 years. Vineland Adaptive Functioning Scale and Paediatric Symptom Checklist (PSCL) scales were used. Result

indicate that Thalassaemic patients had a relatively mild affection for adaptive and psychosocial functioning that can be explained by social and medical support they receive, which may increase their competence and psychological wellbeing.

Thiyagarajan A, et. al., (2019) conducted a study on "Assessing the role of family well-being on the quality of life of Indian children with thalassemia." A total of 250 children and their parents participated in the study. KIDSCREEN-10 and Ryff Psychological well-being scales were used. Result indicate that a positive correlation exists between parent psychological well-being and children's health-related quality of life.

Raman V. et. Al., (2019) conducted a study on "Psychosocial Issues in Children with Thalassemia: From Identification to a Model for Management in a Developing Country". A total of 30 children participated in a study. A semi structured demographic questionnaire, Paediatric Symptom Checklist (PSC-17) and the Strengths and Difficulties Questionnaire (SDQ) and General Health Questionnaire (GHQ) scales were used. Result of the study indicate Psychosocial morbidity was higher in children with TM and their care-givers.

Güneş et. al. (2019) conducted a study on "Sleep problems in children and adolescents with β-thalassemia major". A total of 144 children and adolescents of 8-16 years participated in the study. The Children's Sleep Habits Questionnaire (CSHQ) was used. Result of the study indicated that sleep problems was positively correlated with β-thalassemia major children and adolescents.

6.3 AIMS AND OBJECTIVES OF THE STUDY

1. To evaluate and compare coping strategies in children with transfusion dependent thalassemia and healthy control.
2. To evaluate and compare emotional awareness in children with transfusion dependent thalassemia and healthy control
3. To evaluate and compare internalizing and externalizing behaviour in children with transfusion dependent thalassemia and healthy control
4. To evaluate and compare family functioning between children with transfusion dependent thalassemia and healthy control.
5. To study the relationship between internalizing or externalizing behaviour, coping strategies, emotional awareness and family functioning in children with transfusion dependent thalassemia.

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

Study will be conducted on children with transfusion dependent thalassemia attending thalassemia daily care center and admitted in thalassemia ward at Dayanand Medical College and Hospital, Ludhiana. Healthy control population will be taken from local schools.

7.2 METHOD OF COLLECTION OF DATA

Study Design: cross sectional study.

Sample size: 225 children (75 children with transfusion dependent thalassemia and 150 healthy control)

Sample design: Purposive sampling design will be used. The respondents who meet the inclusion criteria will be selected for the study.

INCLUSION CRITERIA

To be included in the study the participants should meet all the inclusion criteria & none of the exclusive criteria.

EXPERIMENTAL GROUP:

- Diagnosis of Transfusion dependent Thalassemia by Primary Physician.
- Children Aged Between 8 To 16 Years of either gender
- Caregiver willing to give informed consent for participation

CONTROL GROUP:

- Children with No chronic Medical Illness
- Children Aged Between 8 To 16 Years, matched for age, gender and education.
- Caregiver willing to give informed consent for participation.

EXCLUSION CRITERIA

EXPERIMENTAL GROUP:

- Presence of Major psychotic disorder
- History of intellectual disability
- Major neurological disorder, communication and developmental disorder
- Diagnosis of thalassemia in any other family member
- With any other chronic physical illnesses, or body part amputations

CONTROL GROUP:

- Presence of Major psychotic disorder
- History of intellectual disability
- Major neurological disorder, communication and developmental disorder
- With body part amputations

PROCEDURE:

Informed consent will be taken from the participants who meet the inclusion criteria and are willing to participate in study. Socio-demographic Proforma will be filled containing the basic information about the participant and their family. the participants will be evaluated on General Health Questionnaire-12 (GHQ), Child Depression Inventory (CDI), Emotion Awareness Questionnaire (EWQ), KidCOPE and Paediatric Symptom Checklist (PSC-17). Family member would be administered PedsQL™ Family Impact Module. The data will be collected and assessed using appropriate statistical package.

DESCRIPTION OF THE TOOLS:

1. Socio-demographic Performa; informed consent
2. Emotion awareness questionnaire
3. General Health Questionnaire-12
4. Pediatric Symptom Checklist
5. PedsQL™ Family Impact Module
6. KidCOPE
7. Children's Depression Inventory

1. **Socio-demographic Performa:** A semi structured pro-forma was designed for the present study in order to collect detailed clinical history of each participant including information related to the following areas:

- Socio-demographic details including age, gender, MRD number, occupation, education, address, family type, income, social economic status etc.

- Time since diagnosis, Pharmacological treatment, Mean pre-transfusion HB, Average requirement of transfusion, Presence of comorbidities, Cost of treatment per month, Time spent in hospital, Cost of travel and Number of missed school days.

2. **Emotion Awareness Questionnaire** (Rieffe et al., 2008): It is a 30-item scale which measures children and adolescent on the domains of Differentiating Emotions, Verbal Sharing of Emotions, Bodily Awareness, Acting Out Emotions, Analyses of Emotions and Attending to Others 'Emotions. 20 items are reverse coded. Items are scored on 3-point Likert scale, ranging from 0= not true, 1=sometimes true, 2=true. The highest score to be obtained from the questionnaire is 90, and the lowest score is 30. The internal consistency coefficient calculated for the sub-dimensions of the questionnaire varied between .64 and .68 in the primary school group, it varied between .74 and .77 in the secondary school group.

3. **General Health Questionnaire-12** (Goldberg et al. 1988) it is administered on children age 7–19 years. It consists of 12 items. It is divided into 4 subscales: somatic symptoms, anxiety/insomnia, social dysfunction and severe depression. Each subscale assesses the severity of a mental problem over the past few weeks using a 4-point Likert-type scale (from 0 to 3). The total score ranges from 0 to 36. The positive items are corrected from 0 (always) to 3 (never) and the negative ones from 3 (always) to 0 (never). High scores indicative of poor health. The Cronbach's alpha showed a very good internal consistency of the scale ($\alpha = 0.94$).

4. **Pediatric Symptom Checklist (PSC-17)** (Gardner W et al. 1999): It is a 17-item parent-rated questionnaire used to screen for behavioural issues in kids between the age of 4 to 17 years. It has three subscales that assess issues with general childhood attention, disruptive behaviour (externalising behaviour), and internalising issues (depression and anxiety). Parents assign a frequency rating of "never," "sometimes," or "frequently" to the behaviours and symptoms indicated. These answers receive 0 point, 1 point, or 2 points, accordingly. The sum of the individual values for each item yields the final score. After that, this total score is measured against a cutoff (internalisation = 5, externalisation = 7, attention = 7, and total score = 15). The overall score of the PSC-17 shows strong internal consistency reliability (Cronbach's alpha = 0.89).

5. **PedsQL™ Family Impact Module** (Varni, Sherman, Burwinkle, Dickinson, & Dixon, 2004): It is a 36-item parent self-report tool that includes six scales for measuring parent self-reported functioning. The subscales of the test are namely: (1) physical functioning (6 items), (2) emotional functioning (5 items), (3) social functioning (4 items), (4) cognitive functioning (5 items), (5) communication (3 items), (6) worry (5 items), and (2) scales for measuring parent-reported family

functioning; (7) daily activities (3 items), and (8) family relationships (5 items). The test consists of different forms for different age groups (ages 5-7), (ages 8-12), and Teens (ages 13-18) years. Reliability for internal consistency was (= 0.97).

6. **KidCOPE** (Spirito et al., 1988): The KidCOPE is a comprehensive, self-report assessment of children's coping mechanisms. The scale comeS in two variants for children aged 7 to 12. This scale includes 15 items for young children and 10 items for people aged 13 to 18 years old. Distraction, social withdrawal, wishful thinking, self-criticism, blaming others, problem solving, emotional regulation, cognitive restructuring, social support, and resignation are the 10 general cognitive and behavioural coping categories that make up KidCOPE. each item of the test is scored using a Likert-type scale with a range of "not at all" to "very much". There was good internal consistency across the 15 elements, Cronbach's alpha (0.89).

7. **Children's Depression Inventory** (CDI; Kovacs, 1977): it consists of 27 items and is used with children who are between the ages of 7 and 17. The absence, presence, and intensity of the depressive symptom over the previous two weeks are all described in three sentences that make up each item. The child scored 0 (zero), I (one), or 2 (two) for each item. The total score for children ranges from 0 to 54 on 27 items. Higher scores indicated increased prevalence and severity of depression symptom. CDI score of 16 or higher show significant level of depressive symptoms. Internal consistency reliability coefficient for the test is in the range of 0.80s, according to research.

OUTCOME

In the current study, we will look at how emotional awareness affects the coping skills of kids with thalassemia who depend on transfusions. This study will indicate that family of children diagnosed with transfusion depend

thalassemia has effect on their family functioning. This study will provide insight into the psychosocial functioning of children and their family members. The correlations between these variables will be investigated in this study. The results will aid in our analysis of the affected areas and in the planning of treatments to address the psychological issues these children and their families are dealing with. Early psychological symptom diagnosis will help to alleviate distress and preventing the deterioration of psychological functioning, hence, enhancing the quality of their lives.

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. To determine whether the data is normally distributed, a Kolmogorov-Smirnov test will be used. Comparison of quantitative variables between the study groups will be done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square ($\chi 2$) test will be performed and fisher exact test will be used when the expected frequency is less than 5.A probability value (p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

NO

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes, Attached herewith

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PATIENT'S PARENT/GUARDIAN CONSENT FORM

Date: ____/____/____

I ……..F/o, M/o ……..…… R/o ……..……. am willing to let my child participate in the study entitled **"COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason. This will not affect my treatment and investigation of my child.

_____ _____

Signature of the Witness Signature/Thumb Impression of guardian

Name: Name:

_____ _____

Signature of the Supervisor Signature of Candidate

मरीज के माता/पिता का अनुमति फार्म

तिथि ___/___/___

मैं _____ पिता/माता/_____ वासी _____, अपने बच्चे के इस शोधकार्य "COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA" में भाग लेने के लिए सहमत हूँ। मैं शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ कि स्वीकृत देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है कि यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामूली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे बच्चे के इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____
गवाह के हस्ताक्षर

_____
मरीज के माता/पिता के हस्ताक्षर

तिथि _____

पता _____

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नरीक्षक के हस्ताक्षर

_____
प्रत्याक्षी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ_____

“COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA” ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ ।ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ ।ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ_____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ

SOCIO-DEMOGRAPHIC PROFORMA

S.NO: - **Date:**

1. NAME:

2. AGE:

3. SEX: - Male/ Female

4. MRD.NO: -

5. Education-

a) Illiterate b) primary school c) Middle school d) High school
e) Intermediate/Diploma f) Graduate g) Professional degree

6. Occupation-

a) Farmer/Clerical/Shopkeeper b) Semi-skilled/skilled worker
c) Unemployed d) Semi-professional
e) Professional f) Student
g) Other

7. Address- a) Urban b) Rural

8. Family Type- a) Nuclear b) Joint

9. Education of the Head of Family

Profession or honors
Graduate
Intermediate or diploma
High school certificate
Middle school certificate
Primary school certificate
Illiterate

10. Occupation of the head of the family

Legislators, senior officials, and managers
Professional
Technicians and associate professionals
Clerks
Skilled workers and shop and market sales workers
Skilled agricultural and fishery workers
Plant and machine operators and assemblers
Craft and related trade workers
Elementary occupation
Unemployed

11. Monthly income of the family

≥20,482
10,241–20,481
7681–10,240
5120–7680
3072–5119
1034–3071
≤1033

Signature of Candidate **Signature of Supervisor**

12. Socio economic status

Upper Lower middle Lower
Upper middle Upper lower

13. Diagnosis:

14. Time since diagnosis:

15Pharmacological treatment:

16. Mean pre-transfusion HB:

17. Average requirement of transfusion:

18. Presence of comorbidities:

19. Cost of treatment per month:

20. Time spent in hospital:

21. Cost of travel:

22. Number of missed school days:

23. SCALES:

1. **Emotion Awareness Questionnaire** **SCORES=**

   Differentiating Emotions:

   Verbal Sharing of Emotions:

   Not Hiding Emotions:

   Bodily Awareness:

   Attending to Others' Emotions:

   Analyses of Emotions

2. **General Health Questionnaire-12** **SCORES=**

3. **Pediatric Symptom Checklist** **SCORES=**

   Internalizing behaviours

   Externalizing behaviours

4. **PedsQL™ Family Impact Module** **SCORES=**

   Physical Functioning

   Emotional Functioning

   Social Functioning

   Cognitive Functioning

   Communication

Signature of Candidate **Signature of Supervisor**

Worry

Family functioning

Daily Activities

Family Relationships

5. Kidcope **SCORES=**

Distraction

Social withdrawal

Wishful thinking

Self-criticism

Blaming others

Problem-solving

Emotional regulation

Cognitive restructuring

Social support

Resignation

6. Children's Depression Inventory **SCORES=**

CONTACT NO.

Signature of Candidate **Signature of Supervisor**

PATIENT'S PARENT/GUARDIAN CONSENT FORM

Date: ____/____/____

I ……..F/o, M/o ……..…… R/o ……..……. am willing to let my child participate in the study entitled **"COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason. This will not affect my treatment and investigation of my child.

_____ _____

Signature of the Witness Signature/Thumb Impression of guardian

Name: Name:

_____ _____

Signature of the Supervisor Signature of Candidate

मरीज के माता/पिता का अनुमति फार्म

तिथि ___/___/___

मैं _____ पिता/माता/_____ वासी _____, अपने बच्चे के इस शोधकार्य "COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA" में भाग लेने के लिए सहमत हूँ। मैं शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ कि स्वीकृत देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है कि यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामूली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे बच्चे के इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____
गवाह के हस्ताक्षर

_____
मरीज के माता/पिता के हस्ताक्षर

तिथि _____

पता _____

_____

_____

_____
नरीक्षक के हस्ताक्षर

_____
प्रत्याक्षी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ_____

“COMPARATIVE STUDY OF PSYCHOLOGICAL FUNCTIONING IN CHILDREN WITH TRANSFUSION DEPENDENT THALASSEMIA” ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ ।ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ ।ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ_____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ

© Carolien Rieffe, Developmental Psychology, Leiden University, the Netherlands
www.focusonemotions.nl

Rieffe, C., Oosterveld, P., Miers, A.C., Meerum Terwogt, M., & Ly, V. (2008). Emotion awareness and internalising symptoms in children and adolescents; the Emotion Awareness Questionnaire revised. *Personality and Individual Differences, 45*, 756-761.

The way I feel

Please fill out your first name.....

And your date of birth.....

And whether you are a boy or a girl.....

On the next pages, you will find 30 short sentences. Every sentence is a statement about how you can feel or think about your feelings. You can mark each sentence if this is true, sometimes true or not true for you. Choose the answer that best fits you. You can only mark one answer. If you find that difficult, choose the answer that fits you most of the time. Different children have different feelings and ideas about their feelings. Therefore, there are no right or wrong answers, because it is just about what you think.

For example the sentence

“When I feel upset, I try to forget about it”

If this statement is true for you, then mark “true”

not true	sometimes true	true
☐	☐	☒

If this statement is sometimes true for you, then mark “sometimes true”

not true	sometimes true	true
☐	☒	☐

If this statement is not true for you, then mark “not true”

not true	sometimes true	true
☒	☐	☐

		not true	sometimes true	true
1	**I am often confused or puzzled about what I am feeling**	☐	☐	☐
2	**I find it difficult to explain to a friend how I feel**	☐	☐	☐
3	**Other people don’t need to know how I am feeling.**	☐	☐	☐
4	**When I am scared or nervous, I feel something in my tummy**	☐	☐	☐
5	**It is important to know how my friends are feeling**	☐	☐	☐
6	**When I am angry or upset, I try to understand why**	☐	☐	☐
7	**It is difficult to know whether I feel sad or angry or something else**	☐	☐	☐
8	**I find it hard to talk to anyone about how I feel**	☐	☐	☐
9	**When I am upset about something, I often keep it to myself**	☐	☐	☐
10	**When I feel upset, I can also feel it in my body**	☐	☐	☐
11	**I don´t want to know how my friends are feeling**	☐	☐	☐
12	**My feelings help me to understand what has happened**	☐	☐	☐
13	**I never know exactly what kind of feeling I am having**	☐	☐	☐
14	**I can easily explain to a friend how I feel inside**	☐	☐	☐
15	**When I am angry or upset, I try to hide this**	☐	☐	☐

		not true	sometimes true	true
16	**I don´t feel anything in my body when I am scared or nervous**	☐	☐	☐
17	**If a friend is upset, I try to understand why**	☐	☐	☐
18	**When I have a problem, it helps me when I know how I feel about it**	☐	☐	☐
19	**When I am upset, I don´t know if I am sad, scared or angry**	☐	☐	☐
20	**When I am upset, I try not to show it**	☐	☐	☐
21	**My body feels different when I am upset about something**	☐	☐	☐
22	**I don't care about how my friends are feeling inside**	☐	☐	☐
23	**It is important to understand how I am feeling**	☐	☐	☐
24	**Sometimes, I feel upset and I have no idea why**	☐	☐	☐
25	**When I am feeling bad, it is no one else's business**	☐	☐	☐
26	**When I am sad, my body feels weak**	☐	☐	☐
27	**I usually know how my friends are feeling**	☐	☐	☐
28	**I always want to know why I feel bad about something**	☐	☐	☐
29	**I often don't know why I am angry**	☐	☐	☐
30	**I don´t know when something will upset me or not**	☐	☐	☐

Please check
that you have marked all of the sentences.

Thank you!

GENERAL HEALTH QUESTIONNAIRE

We want to know how your health has been in general over the last few weeks. Please read the questions below and each of the four possible answers. Circle the response that best applies to you. Thank you for answering all the questions.

Have you recently:

1. Been able to concentrate on what you're doing?

   Better than usual (0) | same as usual (1) | less than usual (2) | much less than usual (3)

2. Lost much sleep over worry?

   Not at all | no more than usual | rather more than usual | much more than usual

3. Felt that you are playing a useful part in things?

   More so than usual | same as usual | less so than usual | much less than usual

4. Felt capable of making decisions about things?

   More so than usual | same as usual | less than usual | much less than usual

5. Felt constantly under strain?

   Not at all | no more than usual | rather more than usual | much more than usual

6. Felt you couldn't overcome your difficulties?

   Not at all | no more than usual | rather more than usual | much more than usual

7. Been able to enjoy your normal day to day activities?

   More so than usual | same as usual | less so than usual | much less than usual

8. Been able to face up to your problems?

   More so than usual | same as usual | less than usual | much less than usual

9. Been feeling unhappy or depressed?

   Not at all | no more than usual | rather more than usual | much more than usual

10. Been losing confidence in yourself?

    Not at all | no more than usual | rather more than usual | much more than usual

11. Been thinking of yourself as a worthless person?

    Not at all | no more than usual | rather more than usual | much more than usual

12. Been feeling reasonably happy, all things considered?

More so than usual same as usual less so than usual much less than usual

Score range 0 to 36.

Scores vary by study population. Scores about 11-12 typical

Score>15 evidence of distress

Score>20 suggests severe problems and psychological distress

Pediatric Symptom Checklist-17 (PSC-17)

Caregiver Completing this Form: _____ Date: _____

Name of Child: _____

		Please mark under the heading that best fits your child			For Office Use		
		NEVER	SOME-TIMES	OFTEN	I	A	E
1.	Fidgety, unable to sit still						
2.	Feels sad, unhappy						
3.	Daydreams too much						
4.	Refuses to share						
5.	Does not understand other people's feelings						
6.	Feels hopeless						
7.	Has trouble concentrating						
8.	Fights with other children						
9.	Is down on him or herself						
10.	Blames others for his or her troubles						
11.	Seems to be having less fun						
12.	Does not listen to rules						
13.	Acts as if driven by a motor						
14.	Teases others						
15.	Worries a lot						
16.	Takes things that do not belong to him or her						
17.	Distracted easily						
	(scoring totals)						

Scoring:

- Fill in unshaded box on right with: "Never" = 0, "Sometimes" = 1, "Often" = 2
- Sum the columns.
  PSC17 Internalizing score is sum of column I
  PSC17 Attention score is sum of column A
  PSC17 Externalizing score is sum of column E
  PSC-17 Total Score is sum of I, A, and E columns

Suggested Screen Cutoff:
PSC-17 - I ≥ 5
PSC-17 - A ≥ 7
PSC-17 - E ≥7
Total Score ≥ 15

Higher Scores can indicate an increased likelihood of a behavioral health disorder being present.

PSC-17 may be freely reproduced.
Created by W Gardner and K Kelleher (1999), and based on PSC by M Jellinek et al. (1988)
Formatted by R Hilt, inspired by Columbus Children's Research Institute formatting of PSC-17

PSC-17 Scoring

The PSC-17 can help primary care providers assess the likelihood of finding any mental health disorder in their patient. The brief and easy to score PSC-17 has fairly good mental health screening characteristics, even when compared with much longer instruments like the CBCL (Child Behavior Checklist by T. Achenbach).

A 2007 study in primary care offices compared use of the PSC-17 to simultaneous use of the CBCL in 269 children aged 8-15, showing reasonably good performance of its three subscales compared to similar subscales on the CBCL. The gold standard here was a K-SADS diagnosis, which is a standardized psychiatric interview diagnosis. These comparison statistics are summarized below, with positive and negative predictive values shown based on different presumed prevalence (5 or 15%) of the disorders. Providers should notice that despite its good performance relative to longer such measures, it is not a foolproof diagnostic aide. For instance the sensitivity for this scale only ranges from 31% to 73% depending on the disorder in this study:

K-SADS	Screen	Sensitiv-ity	Specific-ity	PPV 5%	PPV 15%	NPV 5%	NPV 15%
ADHD	PSC-17 Attention	0.58	0.91	0.25	0.53	0.98	0.92
	CBCL Attention	0.68	0.90	0.26	0.55	0.98	0.94
Anxiety	PSC-17 Internalizing	0.52	0.74	0.10	0.26	0.97	0.90
	CBCL Internalizing	0.42	0.88	0.13	0.38	0.97	0.90
Depression	PSC-17 Internalizing	0.73	0.74	0.13	0.33	0.98	0.94
	CBCL Internalizing	0.58	0.87	0.19	0.44	0.98	0.92
Externalizing	PSC-17 Externalizing	0.62	0.89	0.23	0.50	0.98	0.93
	CBCL Externalizing	0.46	0.95	0.33	0.62	0.97	0.91
Any Diagnosis	PSC-17 Total	0.42	0.86	0.14	0.35	0.97	0.89
	CBCL Total	0.31	0.96	0.29	0.58	0.96	0.89

W Gardner, A Lucas, DJ Kolko, JV Campo "Comparison of the PSC-17 and Alternative Mental Health Screens in an At-Risk Primary Care Sample" JAACAP 46:5, May 2007, 611-618

PSC-17 Internalizing score positive if ≥ 5
PSC-17 Externalizing score positive if ≥ 7
PSC-17 Attention score positive if ≥7
PSC-17 Total score positive if ≥15

"Attention" diagnoses can include: ADHD, ADD
"Internalizing" diagnoses can include: Any anxiety or mood disorder
"Externalizing" diagnoses can include: Conduct disorder, Oppositional Defiant Disorder, adjustment disorder with disturbed conduct or mixed disturbed mood and conduct

ID#_____

Date:_____

PedsQL™

Family Impact Module

Version 2.0

PARENT REPORT

DIRECTIONS

Families of children sometimes have special concerns or difficulties because of the child's health. On the following page is a list of things that might be a problem for **you**. Please tell us **how much of a problem** each one has been for **you** during the **past ONE month** by circling:

0 if it is **never** a problem
1 if it is **almost never** a problem
2 if it is **sometimes** a problem
3 if it is **often** a problem
4 if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

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*In the past **ONE month**, as a result of your child's health, how much of a problem have **you** had with…*

PHYSICAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. I feel tired during the day	0	1	2	3	4
2. I feel tired when I wake up in the morning	0	1	2	3	4
3. I feel too tired to do the things I like to do	0	1	2	3	4
4. I get headaches	0	1	2	3	4
5. I feel physically weak	0	1	2	3	4
6. I feel sick to my stomach	0	1	2	3	4

EMOTIONAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. I feel anxious	0	1	2	3	4
2. I feel sad	0	1	2	3	4
3. I feel angry	0	1	2	3	4
4. I feel frustrated	0	1	2	3	4
5. I feel helpless or hopeless	0	1	2	3	4

SOCIAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. I feel isolated from others	0	1	2	3	4
2. I have trouble getting support from others	0	1	2	3	4
3. It is hard to find time for social activities	0	1	2	3	4
4. I do not have enough energy for social activities	0	1	2	3	4

COGNITIVE FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard for me to keep my attention on things	0	1	2	3	4
2. It is hard for me to remember what people tell me	0	1	2	3	4
3. It is hard for me to remember what I just heard	0	1	2	3	4
4. It is hard for me to think quickly	0	1	2	3	4
5. I have trouble remembering what I was just thinking	0	1	2	3	4

COMMUNICATION *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. I feel that others do not understand my family's situation	0	1	2	3	4
2. It is hard for me to talk about my child's health with others	0	1	2	3	4
3. It is hard for me to tell doctors and nurses how I feel	0	1	2	3	4

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*In the past **ONE month**, as a result of your child's health, how much of a problem have **you** had with…*

WORRY *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. I worry about whether or not my child's medical treatments are working	0	1	2	3	4
2. I worry about the side effects of my child's medications/medical treatments	0	1	2	3	4
3. I worry about how others will react to my child's condition	0	1	2	3	4
4. I worry about how my child's illness is affecting other family members	0	1	2	3	4
5. I worry about my child's future	0	1	2	3	4

DIRECTIONS

Below is a list of things that might be a problem for **your family**. Please tell us **how much of a problem** each one has been for **your family** during the **past ONE month.**

*In the past **ONE month**, as a result of your child's health, how much of a problem has **your family** had with…*

DAILY ACTIVITIES *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Family activities taking more time and effort	0	1	2	3	4
2. Difficulty finding time to finish household tasks	0	1	2	3	4
3. Feeling too tired to finish household tasks	0	1	2	3	4

FAMILY RELATIONSHIPS *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Lack of communication between family members	0	1	2	3	4
2. Conflicts between family members	0	1	2	3	4
3. Difficulty making decisions together as a family	0	1	2	3	4
4. Difficulty solving family problems together	0	1	2	3	4
5. Stress or tension between family members	0	1	2	3	4

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KIDCOPE
Younger Version

		Did you do this?		How much did it help?		
1.	I just tried to forget it	yes	no	Not at all	A little	A lot
2.	I did something like watch TV or played a game to forget it.	yes	no	Not at all	A little	A lot
3.	I stayed by myself.	yes	no	Not at all	A little	A lot
4.	I kept quiet about the problem.	yes	no	Not at all	A little	A lot
5.	I tried to see the good side of things.	yes	no	Not at all	A little	A lot
6.	I blamed myself for causing the problem.	yes	no	Not at all	A little	A lot
7.	I blamed someone else for causing the problem.	yes	no	Not at all	A little	A lot
8.	I tried to fix the problem by thinking of answers.	yes	no	Not at all	A little	A lot
9.	I tried to fix the problem by doing something or talking to someone.	yes	no	Not at all	A little	A lot
10.	I yelled, screamed, or got mad.	yes	no	Not at all	A little	A lot
11.	I tried to calm myself down.	yes	no	Not at all	A little	A lot
12.	I wished the problem had never happened.	yes	no	Not at all	A little	A lot
13.	I wished I could make things different.	yes	no	Not at all	A little	A lot
14.	I tried to feel better by spending time with others like family, grownups, or friends.	yes	no	Not at all	A little	A lot
15.	I didn't do anything because the problem couldn't be fixed.	yes	no	Not at all	A little	A lot

KIDCOPE
Older Version

INSTRUCTIONS: Please read each item and circle which phrase applies (if any). Then answer both questions to the right of each item, circling the best answer.	How often did you do this?				How much did it help?				
	Not at all	Some-times	A lot of the time	Almost all the time	Not at all	A little	Some-what	Pretty much	Very much
1. I thought about something else; tried to forget it; and/or went and did something like watch TV or play a game to get it off my mind.	0	1	2	3	0	1	2	3	4
2. I stayed away from people; kept my feelings to myself; and just handled the situation on my own.	0	1	2	3	0	1	2	3	4
3. I tried to see the good side of things and/or concentrated on something good that could come out of the situation.	0	1	2	3	0	1	2	3	4
4. I realized I brought the problem on myself and blamed myself for causing it.	0	1	2	3	0	1	2	3	4
5. I realized that someone else caused the problem and blamed them for making me go through this.	0	1	2	3	0	1	2	3	4
6. I thought of ways to solve the problem; talked to others to get more facts and information about the problem and/or tried to actually solve the problem.	0	1	2	3	0	1	2	3	4
7a. I talked about how I was feeling; yelled, screamed, or hit something.	0	1	2	3	0	1	2	3	4
b. Tried to calm myself by talking to myself, praying, taking a walk, or just trying to relax	0	1	2	3	0	1	2	3	4
8. I kept thinking and wishing this had never happened; and/or that I could change what had happened.	0	1	2	3	0	1	2	3	4
9. Turned to my family, friends, or other adults to help me feel better.	0	1	2	3	0	1	2	3	4
10. I just accepted the problem because I knew I couldn't do anything about it.	0	1	2	3	0	1	2	3	4

Children's Depression Inventory

Instructions: Kids sometimes have different feelings and ideas. This form lists the feelings and ideas in groups. From each group of three sentences, pick one sentence that describes you best *for the past two weeks*. After you pick a sentence from the first group, go on to the next group. There is no right or wrong answer. Just pick the sentence that best describes the way you have been recently. Put a mark like this X next to the answer that you pick.

1. [ ] I am sad once in awhile.
   [ ] I am sad many times.
   [ ] I am sad all the time.

2. [ ] Nothing will ever work out for me.
   [ ] I am not sure if things will work out for me.
   [ ] Things will work out for me O.K.

3. [ ] I do most things O.K.
   [ ] I do many things wrong.
   [ ] I do everything wrong.

4. [ ] I have fun in many things.
   [ ] I have fun in some things.
   [ ] Nothing is fun at all.

5. [ ] I am bad all the time.
   [ ] I am bad many times.
   [ ] I am bad once in a while.

6. [ ] I think about bad things happening to me once in a while.
   [ ] I worry that bad things will happen to me.
   [ ] I am sure that terrible things will happen to me.

7. [ ] I hate myself.
   [ ] I do not like myself.
   [ ] I like myself.

8. [ ] All bad things are my fault.
   [ ] Many bad things are my fault.
   [ ] Bad things are usually not my fault.

10. [ ] I feel like crying every day.
    [ ] I feel like crying many days.
    [ ] I feel like crying once in a while.

11. [ ] Things bother me all the time.
    [ ] Things bother me many times.
    [ ] Things bother me once in a while.

12. [ ] I like being with people.
    [ ] I do not like being with people many times.
    [ ] I do not want to be with people at all.

13. [ ] I cannot make up my mind about things.
    [ ] It is hard to make up my mind about things.
    [ ] I make up my mind about things easily

14. [ ] I look O.K.
[ ] There are some bad things about my looks.
[ ] I look ugly.

15. [ ] I have to push myself all the time to do my schoolwork.
[ ] I have to push myself many times to do my schoolwork.
[ ] Doing schoolwork is not a big problem.

16. [ ] I have trouble sleeping every night.
[ ] I have trouble sleeping many nights.
[ ] I sleep pretty well.

17. [ ] I am tired once in a while.
[ ] I am tired many days.
[ ] I am tired all the time.

18. [ ] Most days I do not feel like eating.
[ ] Many days I do not feel like eating.
[ ] I eat pretty well.

19. [ ] I do not worry about aches and pains.
[ ] I worry about aches and pains many times.
[ ] I worry about aches and pains all the time.

20. [ ] I do not feel alone.
[ ] I feel alone many times.
[ ] I feel alone all the time.

21. [ ] I never have fun at school.
[ ] I have fun at school only once in a while
[ ] I have fun at school many times.

22. [ ] I have plenty of friends.
[ ] I have some friends but I wish I had more.
[ ] I do not have any friends.

23 [ ] My schoolwork is alright.
[ ] My schoolwork is not as good as before.
[ ] I do very badly in subjects I used to be good in.

24. [ ] I can never be as good as other kids.
[ ] I can be as good as other kids if I want to.
[ ] I am just as good as other kids.

25. [ ] Nobody really loves me.
[ ] I am not sure if anybody loves me
[ ] I am sure that somebody loves me.

26. [ ] I usually do what I am told.
[ ] I do not do what I am told most times.
[ ] I never do what I am told.

27. [ ] I get along with people.
[ ] I get into fights many times.
[ ] I get into fights all the time.

Gmail **Mudita Kaur <muditakaur@gmail.com>**

Fwd: Kidcope

2 messages

Spirito, Anthony <anthony_spirito@brown.edu> 14 March 2023 at 21:42
To: muditakaur@gmail.com

Here is the Kidcope information - good luck with your research

13 attachments

- **Analyze Kidcope Responses.doc** 23K
- **Child Health Assess.Kidcope0000.pdf** 610K
- **Introduction and scoring instructions.doc** 40K
- **KC Older Version.doc** 36K
- **KC Younger Categories.doc** 26K
- **KC Younger Version.doc** 25K
- **Kidcope Information Sheet.doc** 12K
- **pitflalls.pdf** 170K
- **Scoring Instructions Younger ver.doc** 22K
- **Scoring Multi items.doc** 25K
- **Scoring sheet.doc** 23K
- **sample scenarios.pdf** 147K
- **KidCOPE.docx** 45K

Mudita Kaur <muditakaur@gmail.com> 14 March 2023 at 23:14
To: "Spirito, Anthony" <anthony_spirito@brown.edu>

Thank you so much!

On Tue, 14 Mar, 2023, 9:42 pm Spirito, Anthony, <anthony_spirito@brown.edu> wrote:

> Here is the Kidcope information - good luck with your research